EDISON ELECTRIC INSTITUTE BULLETIN

GEOGRAPHY, RESOURCES & INDUSTRIES
LIPPINCOTT LIBRARY

JUNE, 1942

JUL 2 1942

The President's Address . . . . . C. W. KELLOGG 209
Institute Holds Annual Meeting 212
Our Job in Winning the War . . . . . H. P. LIVERSIDGE 213
Electric Utilities and the War Production Program . . . W. H. HARRISON 217
The Role of Electrical Manufacturers in the War Effort . CHESTER H. LANG 219
San Diego Gas and Electric Company Wins Coffin Award 222
Sauce for the Goose . . . . . C. A. COLLIER 223
For the Record 228
Appliance Problems of Today and Tomorrow . . . . . B. W. CLARK 230
Resolution on Alex Dow 232
Utilities War-Time Transportation Problems . . . . . J. G. HOLTZCLAW 233
The Personnel Problem of the Electric Industry Under War Conditions TOM P. WALKER 235
Current Accounting Problems . . . . . G. H. BOURNE 237
Report of the Prize Awards Committee 239
Utilization Voltage Standardization Recommendations 243
Low Frequency Induction from Normal Load Currents of Distribution Feeders . 244
Low Frequency Shielding in Telephone Cables 245
American Standard Definitions of Electrical Terms Now Available 245
Award Established for Plant Safety 246
Personals 247

Conventions and Meetings, 248

EDISON ELECTRIC INSTITUTE

THE ELECTRIC LIGHT AND POWER INDUSTRY

Current Statistical Data Covering 100 Per Cent of Industry

JANUARY, FEBRUARY AND MARCH, 1942

	MARCH	FEBRUARY	JANUARY
	SOURCE AND DISPOSAL OF ENERGY		
Generation* (Net)			
By Fuel Burning Plants	9,438,333,000	9,664,378,000	11,050,461,000
By Water Power Plants	5,614,857,000	4,437,924,000	4,595,276,000
Total Generation	15,053,190,000	14,102,302,000	15,645,737,000
Add—Net Imports Over International Boundaries			
Less—Company Use			
Less—Energy Used by Producer	NOT	YET	AVAILABLE
Net Energy for Distribution			
Losses and Unaccounted For			
Sales to Ultimate Customers (Kwhr.)	**12,558,386,000**	**12,571,888,000**	**13,242,476,000**
	CLASSIFICATION OF SALES		
Number of Customers			
Residential or Domestic	26,117,610	26,059,874	26,018,993
Rural (Distinct Rural Rates)	1,069,444	1,065,136	1,067,430
Commercial or Industrial			
Small Light and Power	4,317,371	4,322,688	4,331,262
Large Light and Power	147,460	148,066	149,330
Other Customers	120,622	120,033	120,153
Total Ultimate Customers	**31,772,507**	**31,715,797**	**31,687,168**
Kilowatthour Sales			
Residential or Domestic	2,244,451,000	2,405,491,000	2,673,237,000
Rural (Distinct Rural Rates)	167,743,000	156,046,000	144,810,000
Commercial or Industrial			
Small Light and Power	2,198,529,000	2,302,860,000	2,450,376,000
Large Light and Power	6,828,467,000	6,590,383,000	6,777,275,000
Street and Highway Lighting	181,168,000	187,084,000	216,821,000
Other Public Authorities	305,501,000	305,972,000	307,177,000
Railways and Railroads			
Street and Interurban Railways	362,885,000	361,677,000	389,927,000
Electrified Steam Railroads	197,604,000	188,740,000	206,607,000
Interdepartmental	72,038,000	73,635,000	76,246,000
Total to Ultimate Customers	**12,558,386,000**	**12,571,888,000**	**13,242,476,000**
Revenue from Ultimate Customers	**$230,765,900**	**$237,956,700**	**$250,525,600**
	RESIDENTIAL OR DOMESTIC SERVICE (Revised Series)		
Average Customer Data—For the 12 Months Ended	**(March 31st)**	**(February 28th)**	**(January 31st)**
Kilowatthours per Customer	1,002	999	994
Average Annual Bill	$37.17	$37.06	$36.98
Revenue per Kilowatthour	3.71¢	3.71¢	3.72¢

* By Courtesy of the Federal Power Commission.

Vol. 10, No. 6, EDISON ELECTRIC INSTITUTE BULLETIN; published monthly. Entered as second-class matter Aug. 17, 1933, at the post office at Philadelphia, Pa., under the act of March 3, 1879. Publication office, 56th and Chestnut Sts., Philadelphia, Pa. Editorial office, 420 Lexington Ave., New York, N. Y. Subscription rate $2.00 per year in the United States; $3.00 per year in foreign countries.

The Edison Electric Institute does not assume responsibility for, nor necessarily endorse or approve, statements made by contributors to the BULLETIN.

EDISON ELECTRIC INSTITUTE BULLETIN

Volume 10 JUNE, 1942 No. 6

The President's Address

By C. W. Kellogg

President, Edison Electric Institute, New York, N. Y.

An Address before the Annual Meeting of the Edison Electric Institute, New York, N. Y., June 11, 1942

AS we assemble in this, the Tenth Annual Meeting of the Edison Electric Institute, all of our thoughts and energies are concentrated on the winning of the war in which our country is engaged. Since Pearl Harbor the nation has witnessed one civilian activity after another engulfed in the huge tide of war effort, a tide that will continue to rise until the peak of war production is reached. With 86 per cent of American industry electrified and with 60 per cent of the power supply of industry being purchased from central stations, our industry necessarily stands at the very center of the war activity. Consistent with the complete absorption of our interests in the war, the usual Convention has been given up this year and instead we are holding this brief business meeting, devoted to the consideration of war problems.

The Year's Operations

Before discussing the power situation, it is well to state briefly for the record the principal features of the 12 months' operations ending in May, 1942. Generation by all agencies contributing to the public supply totalled 176,750,000,000 kwhr, an increase of 15.4 per cent over the 153,125,000,000 reported for the previous 12 months. Customers as of the end of March were 1¼ million more than a year before. Revenues totalled $2,750,000,000 for the 12 months ending in May, a figure over 9 per cent greater than the $2,665,000,000 shown for 12 months previous. Net income is still unknown due to uncertainty as to the rates for Federal taxation. If the schedules proposed by the Treasury are adopted, many operating companies will experience a reduction of 30 per cent in net income for this calendar year.

MR. KELLOGG

Power Trends During Defense Period

It is now about two years since the establishment of the Defense Commission gave recognition to the necessity for our country to arm for its national safety. The intervening period is long enough to give some measure of the manner and extent of the performance of the utilities. Let us consider the picture in its broad outlines. In the two years from May, 1940, to May, 1942, the National Income, for the 12 months ending with those months, grew from 73 to 96.7 billion dollars. But national war expenditures, on the basis of 12 times the monthly total, grew from about 1.8 to 44 billion dollars. The demand for electricity was more stable. Annual output during the two-year period grew from 137 billion kwhr to 177 billion kwhr, and the May peak load from 26,500,000 to 32,400,000 kw. At present, the rate of increase of industrial power sales is slowing down but residential and retail commercial sales are holding about even with the rate of increase of a year ago.

Electric Power and National Income

It is striking to find that in spite of such a drastic change as War Expenditures going from 2½ per cent to 45 per cent of the National Income, the ratio between total electricity manufactured in central stations and dollars of national income has remained almost unchanged at 1.885. It was lower in May this year than it was in May, 1940, and for 30 months past, the average monthly deviation from the mean has been only about 1¼ per cent. It seems unlikely that a relationship which has remained so constant from Peace to our present level of War Effort would change much in future. Its trend has been slightly downward now for 14 months.

If then National Income appears to be a criterion for total electric energy output, the question arises of how our ability to manufacture has grown with that income. In this respect, total generating capacity has not grown as fast as the National Income in the two-year period, but the load has been carried successfully, partly by an increase in load factor from 55.5 to 57.4 (which alone represents the output of 1,080,000 kw of generating capacity) and partly by a draft on reserves during the two years of about 1,350,000 kw.

Gradual Change in War Effect

It is interesting to observe how the increase in relative volume of war work has affected the status of the utility companies. Two years ago the question uppermost in the minds of utility managements was the acquisition of additional

generating capacity to be able to carry the expected industrial war loads. The first of the units ordered pursuant to this stimulus have been coming into service this Spring and other units in the interim were ordered for completion later this year and in 1943 and 1944. At the present time installed generating capacity serving the public supply totals 45,000,000 kw representing a gain of about 4,350,000 kw since June, 1940. Another 7,000,000 kw is in various stages of manufacture for intended delivery during the remainder of this year and in 1943 and 1944.

Even before this first flight of additional generating capacity was delivered, however, the scarcity of raw materials on the one hand and the greater demands for ship propulsion on the other, became so acute that the War Production Board was obliged to order fabricating work ceased on some generating units, or to order others to be diverted to uses where the war need was deemed greater. Today no new generating equipment can be obtained without WPB approval, and in many localities we shall have to do the best we can with what we have.

Ability to Carry Loads

Although the nation's war expenditures have already reached and passed the maximum levels expected before Pearl Harbor, and although the rationing of materials has long been necessary to the point of wiping out many industries, no war or civilian activity has been obliged, except for a few weeks in the Southeast last year, to curtail operation due to lack of power. The necessity already mentioned of diverting critical materials from work on generating capacity in process of manufacture to other more pressing war needs, may lead later to the necessity of rationing power, at certain hours, in certain localities, where war industrial loads are particularly heavy. Accuracy in predicting this year's peak load is difficult on account of uncertainty as to the magnitude of the offsetting effect of discontinuance of civilian industrial activity and also on account of the amount of war industrial plant construction that has had to be given up due to lack of materials. But in general, experience to date would lead to the belief that the war industrial effort will be buttressed by an adequate power supply.

For example, while since last May the Index of Production of Producers' Goods has risen from 121 to 146, the manufacture of Consumers Goods has gone off to such a degree that the combination of the two is up only about 2 per cent in the year; and the New York Federal Reserve Bank's Index of Production and Trade was exactly the same in April this year as in May last year.

The composite picture of all electric systems contributing to the public supply is about as follows: in June, 1940, the then highest non-coincident peak load of 29,300,000 kw compared with generating capacity of 40,650,000 kw —a margin (not of course all usable) of 11,350,000 kw. At the present time, the latest non-coincident peak of 35,100,000 kw is 10,000,000 kw less than present installed capacity of 45,000,000 kw. There has thus been a draft on reserves of about 1,350,000 kw. Further drafts on reserves are expected by the time of this year's peak in December.

How the Production Board is Prepared

The Power Branch of the War Production Board is well prepared to meet any emergency that may arise. In their Order L-94, issued in April, they have provided for the procedure to be followed in any area where a power shortage threatens. The experience obtained in the Southeast last summer and fall, when drought (not generating capacity) caused a temporary shortage of electrical energy for operating war industry, will, it is understood, be a pattern of the methods to be followed elsewhere if the occasion calls for it. Their main point is that we must do the best we can with what we have.

Comparisons between peak loads and generating capacity often overlook the fact that the peak is the highest single hour in the 8760 hours in the year. During other hours the loads are substantially less. Curtailment of civilian service, when required, should therefore be of relatively short duration and no war industry need be curtailed for lack of power.

Taxes

In the matter of increased Federal Taxes, which represent the greatest menace the utilities now face, their inherent stability in earnings is a hindrance rather than a help. The average war industry, with only a fraction of the investment per dollar of annual gross earnings of the utilities, can experience an uprush in profits which can be heavily taxed without changing the company's status materially with respect to balance for dividends. The average utility, however, with relatively stable earnings and with five eighths or more of its costs consisting of charges on fixed investment, will find itself unable to pay dividends on the large part of that investment represented by stock, because of the proposed tax on so-called "excess profits," which are not such because they are computed without deduction of the normal and surtaxes.

State Public Service Commission regulation, by keeping rates down to a level just sufficient to attract new capital to the business, theoretically eliminates any "excess profits" from utility operation at all times, so that an excess profits tax on such earnings means in practice simply a very large tax on normal earnings.

Realizing as we all do that the maximum part of the war costs must be paid from current government tax receipts, in order to keep the national debt down as low as possible, and that the process at best has got to be painful, the utilities have hesitated to ask for special consideration, but as a matter of survival, for the war effort itself, have felt compelled to do so. Three possible ways to make the burden proportionate to ability to pay, and to the inherent conditions of the utilities, have been proposed:

1. Provide for deduction of normal and surtaxes in arriving at excess profits income (which, without such deduction, is not "excess profits").
2. Permit deduction of dividends, as well as interest paid, in computing taxable income (since dividends are just as essential a part of the utility's cost as interest charges).
3. Allow deduction, in computing taxable income, of amounts paid out of earnings in reduction of debt called for by specific commitment.

Government Power Developments

Federal Government power developments, incident to improvement of navigation, flood control and irrigation, were pushed actively during the depression as a method of lessening unemployment and they have been accelerated since 1940 in order to furnish power supply for those war industries, like the manufacture of aluminum and other electrochemical processes, which call for large amounts of concentrated power. In 1941, government plants, both municipal and Federal, manufactured 12 per cent of the public electric energy supply.

Financing

Recent years have witnessed a radical change in the financing of the utilities—so radical in fact that a decade ago, present accomplishments would have

seemed impossible. During the six years ending with 1930, the systems of 13 principal holding companies (representing 60 per cent of the industry) raised slightly over $3,000,000,000 for new construction. About three-fourths of this was raised by the sale of securities and nearly a half of this amount so raised was by the sale of holding company securities—a contribution which alone made the whole program feasible. The remaining quarter of the total construction funds came from reserves and surplus earnings.

In the last seven years we find the situation exactly reversed. With total construction requirements for the whole industry in these seven years of about the same order of magnitude as that analyzed in the previous decade, only 18 per cent of total construction funds was raised by the sale of securities, the balance (of 82 per cent) having been supplied from reserves, surplus earnings and some draft on current resources. Futhermore, compared to 35 per cent raised by the sale of securities of holding companies (based principally on common stocks) in the late twenties, less than 1 per cent from the sale of common stock in the period just ended.

Current Financing

On the other hand, in case my statement about latter term financing should seem depressing, it is of interest to be able to announce by way of contrast that in the 12 months just ended, the utilities raised more new money by the sale of securities than in any year since 1931; and the amount of refunding was the smallest since 1936. The securities sources of new capital were: Bonds, $94,361,000; Preferred Stock, $33,486,000; Common Stock, $6,732,000. The new bonds, however, amounted to only about one-sixth of the total new construction expenditures.

Man Power Problems

The very prominence of the role of power in our national war effort proves the necessity for intelligent selection of our man power for the armed forces. The needs of men for our armed forces are so large, and skilled men for industry so essential in the war effort, that the national interest demands making use of every man in the place he will be most effective. The Government must take the men it needs for military service, contingent on age, health and dependents, and our industry on its part must advise the Government of those categories of men whose loss would really jeopardize electric service to war industries, contingent on using our best efforts as to substitution or training or actually saving labor. A definite schedule, embodied in Selective Service System Bulletin No. 9, issued last week, has resulted from recent discussions with that agency, in which the newly formed Council of Electric Operating Companies has taken the leading part.

Residence Consumption Passes 1,000 kwhr

One of the major efforts of the electric utilities for many years has been to increase the consumption of electricity in the home, so that by saving household drudgery and increasing conveniences, American home life could be an easier, happier existence. By spreading charges over a constantly larger volume of output, average kilowatthour rates were gradually decreased. In this war year we reached, nation-wide, the new milestone of 1000 kwhr per home per annum and an average residence rate of 3.65 cents. Ten years ago the average use was about 601 kwhr and the average rate 5.64 cents, and the decade before that consumption was 359 kwhr and the average rate 7.38 cents, so the point reached this year has been attained by long and continuous effort.

Effect of War on Commercial Activities

This achievement is largely the result of the work of our commercial effort and it illustrates strikingly that combination of sales and service which has always characterized that phase of our business. The effort of the war, in necessitating the discontinuance of manufacture of household electric appliances and in curtailing services to new customers, has been to dry up much of the strictly sales function of our commercial departments; but the service end is as useful and important as ever.

The maintenance of household equipment in millions of homes, the guiding of our small industries into useful and effective war work and cooperation with the WPB in handling the many details that power rationing may involve, all combine to keep very busy such of our commercial forces as will not be required by the Army or Navy.

Having in mind the basic needs to which our services minister, we must look to the future even during the stress of war; and friendly and intelligent attention to the service problems of our millions of customers now should be the basis for continued good-will in future.

Holding Companies

Dissolution proceedings under Section 11 of the Holding Company Act are in various stages of progress with practically all the public utility holding companies. The substantial measure of relief from complete dissolution which was expected when Congress inserted in the bill the clause permitting the holding of "one or more additional integrated systems" has been deprived of practical value in most cases by the ruling of the SEC that such additional systems must be in the same or adjoining state as the principal system.

No advised and fairminded person can deny the great and valuable services the utility holding companies have performed and can continue to perform for the public, just as every advised and fair minded holding company management had long recognized the evils that had grown up in connection with some holding company systems. The elimination of evils in an otherwise sound body by the firing squad route seems like the sort of thing we are fighting this war to prevent in future.

Institute Activities

The many new problems brought by the war have naturally been reflected in the activity of the Standing Committees of the Institute and the Staff. New problems especially require consulation and discussion, whereby each member can obtain the ideas of others on each such subject; and furnishing facilities and organization for this purpose is one of the principal functions the Institute is set up to perform.

Annual Conferences

Each of the annual conferences of the Commercial, Accounting and Engineering groups held this year brought out large attendance and produced discussions of great interest and value to those attending. The topics covered were those arising out of war conditions, with more time and attention given to discussion than to formal papers.

The Commercial Conference, for example, was devoted to considering how the work of such departments could keep up civilian morale by the servicing of household equipment, the maintenance of home lighting during blackouts and the effective translation of small industry from civilian to war manufacture.

The Accounting forces centered their attention on labor-saving and tire-saving expedients and taxation problems. The Engineering groups, using largely the conference method, have directed their work toward such war problems as increased use of existing generating equipment and other plant, fuels and personnel matters. Increased output has necessitated general revision of maintenance and overhaul schedules, even in the face of some special maintenance requirements arising from such high duty as would not be expected in normal times. So far, service standards have shown no general impairment, although the WPB officials have predicted that this should be expected, in view of the shortage of materials.

General Meetings

In addition, general meetings for direct discussion with government officials were held at Pittsburgh in March and in New York this month. These were of great value, not only in furnishing to such officials an opportunity to get their message direct to those who must help to carry out government policy in actual operation, but also in enabling the utility men to obtain a clearer picture of what is expected of them. Utility operating officials have been impressed with the able and energetic manner in which the Power Branch of WPB is functioning and we believe the latter are finding the most complete and intelligent cooperation in the task of making the nation's power supply adequate for all war needs. It is planned to hold similar meetings when circumstances shall justify.

Conclusion

The rapid growth in scope of the war industrial activity since Pearl Harbor has affected not merely civilian activity, but also the war effort itself. With so many of the basic war raw materials limited in amount, decisions have to be constantly made as to which war need must take precedence over some other. This has affected the utilities, along with other war industries, in the necessity of discontinuing fabrication of generating equipment long on order, or of transferring it from one company to another. It is the basis for the feeling that from here out we must in many cases do the best we can with what we have.

It is a source of deep satisfaction to the utilities that so far drafts on surplus capacity have been as small as they have been and that no power shortage has arisen from lack of generating capacity. It is a reasonable expectation that further drafts on reserve capacity as the war progresses will be within the ability of the utilities to meet; but in no event must any war industry have to curtail from lack of electric power. In such adjustments as may be necessary to accomplish this end, the utility industry, with its able, resourceful and experienced personnel, stands pledged to cooperate with the government authorities throughout the war to the limit of its ability.

Annual Meeting of the Institute

AT the 1940 Convention of the Institute, held at Atlantic City during the Dunkirk evacuation, the electric industry expressed its willingness and readiness to devote its full capabilities, its best efforts and resources to aid our country by continuing to maintain an ample supply of electric power for war industries. The nation was also assured that the power system of the country was ample for any war need that might develop.

At the 1941 Convention in Buffalo, and at a time when government spokesmen were predicting an outlay of 100 billion dollars for war production, reassurance was given that power resources were adequate for any emergency.

On June 11, 1942, with the country at war for six months, with war production at practically full capacity, according to official statements, and with war appropriations passing the 200 billion mark, representatives of the private utilities at a one-day meeting of the Institute were in position to show modest satisfaction over the fact that the industry's pledge of 1940 was being kept, and a high official of the War Production Board could say "the record is clear as to this—power is meeting war demands". *"Clear cut evidence of this is to be found in the fact that in no instance that I can recall, has production been delayed because of lack of power . . . This is to the credit of the industry for its ingenuity and effective integration of facilities in meeting the current situations and for its vision, forward looking planning and sound engineering and operation over the past years".* . . . .

* * *

The one-day business meeting held at the Biltmore Hotel, New York, and a special meeting on war problems, held the previous day, June 10, under the auspices of the Operating Committee took the place, as a war-conservation measure, of the usual annual convention of the Institute, and was attended by utility executives from all sections of the country.

At the morning session of the special meeting of war problems, J. A. Krug, Chief of the Power Branch, W.P.B., and Walker L. Cisler, Consultant, Priorities Section, W.P.B. talked informally on prorationing problems of the industry and the priority and supply situation, their talks being followed by discussion from the floor. The afternoon session was devoted to discussions of operating problems and financial questions. Subjects and discussion leaders included: Personnel—Tom P. Walker; Transportation—J. G. Holtzclaw; Office and Accounting Problems—G. H. Bourne; Taxes—Justin R. Whiting; Rates—F. A. Newton.

War problems of the electric industry also dominated the talks at the general meeting on July 10th. Speakers at this meeting were C. W. Kellogg, President of the Institute, H. P. Liversidge, President, Philadelphia Electric Company, W. H. Harrison, Director, Production Division, War Production Board, C. A. Collier, Vice President, Georgia Power Company, Chester H. Lang, Vice President, General Electric Company and B. W. Clark, Vice President, Westinghouse Electric and Manufacturing Company.

Members of the Board of Trustees whose terms expired in 1942 were all re-elected except Mr. Thomas N. McCarter of Public Service Electric and Gas Company of New Jersey, who asked not to be re-nominated. Two additional members of the Board were elected, these being Messrs J. E. Davidson, Nebraska Power Company, and A. B. Patterson, New Orleans Public Service Incorporated.

Present officers of the Institute were re-elected with the exception of Mr. Davidson, who had asked to be relieved of his duties as a vice-president.

Our Job In Winning the War

By H. P. Liversidge
President, Philadelphia Electric Company

An address before the Annual Meeting of the Edison Electric Institute, New York, N. Y., June 11, 1942

WE come together for this meeting under conditions of total war, a war that is on our minds every minute of every day. All of our acts, all of our thoughts are conditioned by it. To win it is our sole objective.

Therefore, the subject I intend to discuss with you today is "Our Job in Winning the War."

And when I say, "Our Job," I mean, of course, the job of privately-managed electric utilities of the United States which furnish electric power to a vast majority of the consumers of this Nation.

So let me say at the outset, without the slightest qualification, that everything we do, every move we make, every thought we think, must be subservient to the Nation's interest.

That is our individual and corporate duty though we may not always be thought of by others in terms of corporate entity and power plants and systems of distribution.

To the average person we are quite likely thought of simply as electricity. The average woman probably thinks of us in terms of the switch on the wall. Ask her what electricity is and she is apt to say: "Why, electricity is what supplies our lights and runs our appliances."

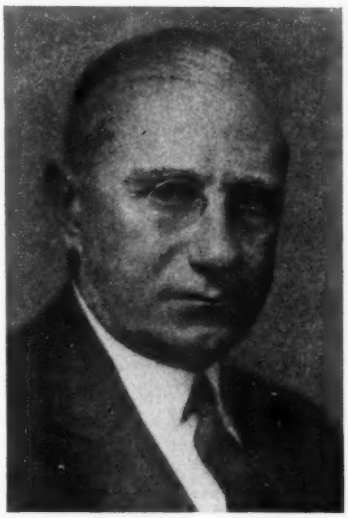
The average man may say: "Why, electricity is my morning shave and the trolley car that takes me to work, and a bill at the end of the month—everybody knows that."

And the manufacturer is most likely to think of us merely as the power for his machines and the light for his plant.

There are many other average men and women—thousands of them, who will say: "Electricity? Why, electricity represents the savings we have invested against the rainy day."

So you see—the average viewpoint does not consider the complicated structure that makes electricity commonplace.

As for the soldier—he speaks today with his bayonet and his gun, and his life, if need be. To him—whether he realizes it or not, electricity is an umbrella of fighting planes over his head and a wall of tanks to back him up. For electricity is the power that has shaped his weapons.



MR. LIVERSIDGE

Let's go on. Let's ask the Future—that brooding figure now so busily filling these new pages of history. "Electricity," the Future would say, "is part of the four freedoms and the end of slavery. It is a force for smashing the Axis and all it stands for. It is the victory of the common man against back-breaking labor. It is the key to an improved standard of living for all mankind."

So, gentlemen, in the administration of our daily tasks—no matter how commonplace they may appear to us—they do constitute a grave responsibility to humanity.

That responsibility, mark you, and that alone must be our yardstick of today. It must be our yardstick in the future if we are to maintain our place among the privately-managed industries of tomorrow.

Put in other words, anything we do—whatever we do, must be justified by how well it serves the common interest—what it does for the Nation as a whole. And in our great effort of today, everything must be subservient to the all-important job of winning this war.

In fact, a new pattern is forming in America out of the realization that this war will be won by the United Nations.

It is a pattern of unity and mutual cooperation. Men as well as industries are finding their places in this pattern and doing with all their minds and all their hearts the tasks set before them. And vitally important to this pattern is the business of furnishing electricity.

Some people, thinking of electric power, will think of the recently created Federal projects such as TVA and Bonneville and Grand Coulee, which represent such a magnificent contribution to the power resources of this country.

But still, all the great government plants together supply only a little more than 7 per cent of the nation's electric power. Municipal plants supply perhaps another 5 per cent. Thus we find that practically all the rest of the electrical energy is supplied by the privately-managed electric utility companies—the companies represented by those of us who are here today.

These companies are the mainstay of America's electric power requirements, and on them depends most of the war production that will ultimately defeat the enemies of a free world. That should give you a broad picture of our responsibility—and the job before us.

In this new pattern of life that is forming, many things are changing—many things will never be the same. And because things never will be the same, it takes a new kind of thinking to project the business of today into the future. Likewise, it will take a new kind of business man to work harmoniously with the new conditions.

There is a new significance in public service and in public responsibility.

I venture to say to the managers of electric utilities, and to business in general, that in the years to come the really big men—the true leaders—will be those who, building on the experience of recent years, best understand the philosophy of sound public relations . . . men

who recognize this public responsibility —men who will interpret business and industry in terms of the needs of the community, and the benefits which must accrue to it and to the Nation. All must realize unselfishly that big business is not "our" business, but the people's business.

Our existence and our destiny is justified, not alone by what this business may bring to capital; not alone by what it may bring to labor. No! The destiny of this industry rests solely on the benefits it will bring to all the people and to the Nation as a whole.

Especially is this true in this time of terrible, total war. Nothing else matters in the least.

On November 7, last, just a month before Pearl Harbor—the President expressed that which was in the heart of every thoughtful citizen when he solemnly declared: "The American people have made an unlimited commitment that there shall be a free world."

On that day, the gratifying state of preparedness in which privately-managed electric utilities found themselves was due to two main factors:

In the first place we, as an industry, had learned early to look ahead. With the development in size of our service and the growing dependence of huge populations upon us for comfort, convenience and safety over the years, we have set for ourselves increasingly high standards for the quality, quantity and dependability of electric service. And from my observations, few other businesses have set for themselves so high a standard.

More recently, many electric utilities have entered upon carefully planned programs of capital expansion. They have sensed the approach of tremendous demands and—by large-scale planning—have made ready for it.

The result is that up to now, except for isolated cases here and there, the electric industry has met the constantly increasing power demands without the necessity of rationing or curtailment. However, this can give no guarantee for the future since the tempo of our great industrial program is still accelerating at an enormous rate.

It is important, therefore, that the public understand now, that the time may come when some of the less-essential electric services will be required to make their contribution to the war effort by a curtailment of use.

When you consider that, as late of 12 months ago, few could foresee the tremendous schedules of production involved in today's war program . . . the accomplishment of the electric utilities, by and large, has been highly creditable.

This achievement is high-lighted by the fact that the location of war implement plants has followed a new geographical design—based upon the necessities of war rather than upon normal expansion. And so, it is with a reasonable degree of pride that I am able to say that only on rare occasions has a manufacturer been held up in his war effort due to inability instantly to get the power needed for his work.

Perhaps, if I should summarize our recent growth in terms of kilowatts, it would show to some degree why the war effort found us ready in this emergency.

If we go back to the large expansion program carried on through the twenties and thirties, we find that the generating capacity of all plants, public and private, contributing to the public supply, increased from 14 to 44 million kw—a growth of 30 million kw of power.

Privately-managed electric utilities were responsible for 24 million of that 30 million kw increase.

The increase for privately-managed projects was approximately in the ratio of one to three, although during that same period most of the great Federal power projects were built and put into operation.

In passing, it is of interest to note that this expansion could hardly have been possible without the faith of the small investor in privately-operated electric utilities. In fact, an analysis of public-utility security holders shows that they are, in a large majority, people of modest means. They own the industry today because it provided an opportunity by which their savings could be made to earn a fair return with a reasonable degree of safety. And, of course, the utility bonds owned so widely by insurance companies represent, in reality, the pooled savings of thousands of everyday people. The use of these savings has been the chief factor in the growth of the Nation's electric plant capacity.

At the end of the great development of the twenties the installed generating capacity had reached about 34 million kw.

Of these, approximately 14 million represented reserve power.

By the end of 1941, generating capacity had increased another 10 million kw to a total of 44 million, but the reserve capacity decreased from 14 to approximately 9 million kw.

A large part of that decrease in reserve has come in the last two years.

In other words, while the decrease in reserve capacity has been only 5 million kw in 11 years, the greater part of that decrease has been the result of the recent preparations for national defense.

This is a significant figure, especially at this time, because it indicates how our war program already has used up a considerable amount of our reserve supply.

It is important that people understand the cause of this diminishing reserve because, as has already been pointed out, our job in winning this war may entail the necessity, eventually, of curtailment of some of the less-essential electric services here and there, so that no war machine ever will have to stop or slow down because of lack of power.

Until now, we have not been confronted with this problem. In fact, except for a brief period during the serious drought in the Southeast last spring and fall, there has been sufficient power for everyone.

In the earlier defense program, it was predicted that by the spring of 1942 the annual rate of government expenditure for war materials would reach a figure of about 29 billion dollars. But due to the accelerated activity since Pearl Harbor we find the war expenditures moving currently at a rate of about 46 billion dollars a year and by the end of 1942 a rate of 75 billion dollars a year is indicated.

It is part of our job to keep up with that accelerated pace and I feel we shall.

The plan for power expansion by the electric utilities contemplated for 1942 and beyond is indicated by tremendous additional generating capacity, on order, or in process of construction. It can be conservatively stated that for 1942 alone this amounts to more than 3,300,000 kw; for 1943, 3,400,000 kw and, for 1944, almost 2,900,000 more.

But difficulties in obtaining essential materials have become increasingly great and it now looks as if priorities will not only restrict electric power expansion somewhat this year but may affect our extensions to a far greater amount in 1943 and 1944.

Naval and transport shipping, of course, come first and their needs already have made it necessary to divert over a million kw of generating equipment to provide propulsion for ships.

Thus the increased tempo of produc-

tion as well as the numerous and sometimes precipitous changes due to rapid shifts in Army and Navy plans, lends support to the predictions of some government officials that a power shortage is ahead of us for 1943, with the consequent need of local rationing of power in some cases.

A great many factors necessarily are involved in any prediction. Among them is the fact that a great amount of civilian activity requiring power has been displaced by war work. Another is the effect of the clock's advance to "War Time." This partly explains the greater drop of the non-coincident peaks in April of this year over last.

In April, 1941, for instance, the drop in the non-coincident peak from the previous December was 2 million kw. This year that drop was 3 million kw.

But before this year is over, the non-coincident peak will certainly increase over last year's, and, even allowing for the additional generating capacity expected to be installed, it seems most likely that reserve capacity will be reduced by another 3 million kw by the end of 1942.

In all our thinking we must, of course, always keep in mind that all reserves are not available for peak use. Some reserve must be provided for maintenance requirements. This is true both of hydro and steam. And while there are many unpredictable factors involved, it seems safe to conclude that by the end of 1942 and during 1943, there may be some areas that will not have sufficient power for completely unrestricted use. On the other hand, I doubt if there will be any area in the country that will not be able to supply the local war load through some curtailment or spreading of non-essential civilian use of power.

The availability of reserve power has been affected by demands that were unforeseen earlier this year. At that time the program presented to American industry was mountain high. Even optimists shook their heads. Many said the production schedule as laid down could not be achieved. But American industry has performed a miracle!

Industry after industry is beating the demand made upon it and America's production is setting new and undreamed-of records. The impossible is being done. Management, labor, the War Production Board, the Army, Navy, the Maritime Commission, and other governmental departments are working together toward the common goal. They are doing things that seemed impossible of achievement. As one company expressed it in an advertisement: They are making next year's headlines come true today.

These amazing accomplishments in war production go far to explain the tremendous demands made upon the electric utilities. . . . Having met those demands is commentary enough upon the way in which every man and woman in the electrical industry, in high position and low, has responded to the call.

Now, having done our best in marshaling generating capacity for our war job, it is logical to ask ourselves: "What else can be done to insure a continuous supply of electricity to war industries and at the same time care for the millions of our regular customers who depend upon our service?"

One thing we can do is to extend the pooling of our reserves.

There may be many situations where interconnection of neighboring power systems as well as with industrial and commercial plants, will alleviate shortage of power at points where the situation is or may become critical. While many such studies are now in progress, everything should be done to expedite this work so that the necessary arrangements may be put into effect without delay.

If there is hesitancy, on the part of certain utilities or industrial establishments, to enter into an interconnecting or pooling arrangement because of local or other regulations, I believe that government, through its proper agencies, should waive such regulations for the duration.

We have long ago learned the inestimable value of foresight, and wise operators will see to it that the most rigid attention is now directed toward a policy of anticipating major repairs so as to forestall the possibility of shutdowns and loss of capacity due to failure at the period of greatest peak demands. Neighboring utilities should consult with each other, coordinate and time their repairs and maintenance programs for major apparatus so that the reserves in the area will be least jeopardized. For many companies summer is the best time for this work.

Studies indicate that the loads we will carry next year will be of considerably higher load factor than in the past, meaning, of course, fewer hours of operation at less-than-maximum capacity. This will mean less time available next year for inspection and overhaul of equipment. Greater is the reason, therefore, to exert all our effort this year—and especially this summer—to put our plants in the best possible condition.

Glancing for a moment at another public service—transportation—we see the increasing quantities of freight and troop movements that must be handled by the railroads. That is why the government is urging civilians to fill their coal bins now while transportation is still available. This is good advice for electric utilities too.

Whenever possible, and to the fullest extent possible, stock up on fuel now and through the summer months. That is the patriotic as well as the sound and practical thing to do.

In time of peace our economy has been one of plenty. To individuals as well as to industry the best was never too good. But now, remember, we are in a universal war which we must win. This war places tremendous demands upon our national material resources—demands that can be met only by an economy of scarcity for everything except the actual materials of war. And like all other industries, we must now reduce our requirements of critical materials—even if in so doing it means a reduction in the standards of service we have so carefully built up through the years.

These principles must be brought home to every man and woman in every organization. They must be told to our customers, large and small, for all must understand the necessity for conservation of essential things. We must find new ways to do old things, new materials to do them with. We must use all the technical ingenuity we have to cut down the requirements of critical materials in our plant expansion and maintenance programs.

There are many items in a power plant or any other plant belonging to a utility system for which the design and specifications may be altered in time of war.

In some cases this can be done without affecting the service; in others the standards must of necessity be reduced.

Many things that seem essential in ordinary times are really not essential in time of war. For example . . . must doors, stairways or floors in power plants substations now under construction be made of iron or steel? Is it essential for new installations to specify mechanisms for opening windows that require iron and steel? Cannot a power plant gen-

erate electricity without copper flashings or copper gutters? Can we not use wood poles instead of steel towers on straight runs for new transmission lines? Is it too painful to change the specifications on new penstocks so as to reduce the amount or thickness of steel plate? And how about overhead instead of underground transmission for the duration?

These and other ways to save vast quantities of critical materials will suggest themselves and, as far as my knowledge goes, I feel confident they are being applied in large measure by most of the companies today. Remember, gentlemen, our one important job right now is the part we must play in winning the war.

While I do not discount in the least the critical problem of plant expansion, nevertheless, weighed in the balance of total war demands, it does become a matter of only relative importance. Each additional kilowatt of plant expansion requires something over 400 pounds of such critical metals as steel and copper. Each pound of these materials we use means one pound less for weapons for war and, therefore, it MAY prove to be the wiser thing in many cases to limit expansion to bare necessity even if it results in curtailment of non-essential use of power.

When we realize fully that a bullet can be more important than an extra light, then we shall realize how careful we must be in the use of any critical materials for expansion—and I'm certain our customers will be quick to grasp the significance of this.

The cooperation of consumers can be an important factor in conservation. Ordinarily the customers have no time for power details. In many fabrication industries, the cost of electricity represents less than 1 per cent of the value of the finished products, so your customer has little reason to give it a thought. He never asked how his load cycle may fit into your *system* load cycle. But your sales organization has a duty here and it can produce gratifying results in helping your system serve all your customers by urging the cooperation of those whose use of power varies by a substantial amount.

While such assistance suggests itself in the case of large industrial customers, perhaps it should be extended to other customers, too. It's merely a matter of education. If, for example, the general use of some major appliance, such as an electric range coincides with your system peak, it may help considerably if, by advertising or other means, you take your domestic customers into your confidence and win them over to using power when it may be spared from war production.

In reviewing some of these major factors affecting our business in these times I feel the necessity of commenting upon a few other matters of continuing importance to our well being—among them labor, price ceilings and taxes.

From the viewpoint of labor relations, our industry has a record of which it may well be proud.

Only in extremely rare instances have misunderstandings reached the point where strikes have been called. Not once, since the war began, has the production of electric power been seriously threatened. Several things have contributed to this fact. Most important, of course is patriotism. Utility workers have long been possessed of a high sense of public responsibility. Furthermore, utility employees enjoy a high degree of security with consequent freedom from worry about their job. Wage rates are relatively high, working conditions are uniformly good and many electric companies have excellent pension systems for the retirement of faithful employees.

Naturally, the fighting forces as well as our Federal government have drawn heavily upon the man power of the public utilities and the curtailment of all non-essential routines has been a matter of necessity.

In some cases less frequent meter readings have been adopted, even to the point of asking the customer himself to report the amount of electricity he has consumed. Such steps lead toward the conservation of manpower, gas and rubber.

As for price ceilings, the utility industry stands in a unique position with regard to the anti-inflationary measures of the government. The Federal price ceiling program does not apply to utilities because they have been operating right along under their own price ceiling of stable rates. Costly power expansions have been made to meet war-time power needs without any advance in the selling price of current. Therefore, the general price ceiling is probably a fortunate thing for us, for if other costs were permitted to rise without control while our rates remained fixed, the situation for us would be difficult indeed.

I would like to mention briefly the subject of taxes. Taxes these days are a source of concern to every individual and business in the country. This industry contributed over a half-billion dollars in taxes last year and we know full well our taxes will be even larger this year. Taxes, therefore, are particularly important to us in the electrical industries. But meetings of this kind, I feel, are not the proper places to enter into involved discussion of this increasingly serious problem. However, it is my belief that, as individual companies and as an industry, we should present our tax problems, clearly and specifically, to the proper taxing authorities. Unless we do this we cannot expect them to understand our problems fully. It becomes our duty as I see it, therefore, that we make certain that those who are framing our tax laws have a full and complete understanding of the specially vulnerable position of the electric utilities.

At the same time we must keep in mind that the taxing authorities have their own problems in raising the huge sums needed for war purposes and, as staggering as our tax burdens are, we must be willing to bear our fair share of the cost of winning this war.

But we do have a responsibility to our customers and our investors as well as to ourselves to state our tax case at the proper time and place. For, in the long run, taxes are inevitably reflected in our rates.

It is well to remember that, with all the great increases in taxes that have occurred during recent years, rate reduction has followed rate reduction. The increasing efficiency in generating and distributing electricity, of course, has contributed largely to this. But so frequently have these reductions been made, particularly during the last two decades, that they have come to be taken more or less for granted. They have become a habit, as it were. However, it is a path that may not be followed indefinitely if serious difficulties are to be avoided.

Many companies already have reached the point where it will be impossible to make further reductions in the face of increasing taxes and higher costs of fuel and labor, and some, I know, would be justified in asking for rate increases. To remain useful, which means we must remain sound, all must guard against being caught between the pincers of decreasing revenue and rising costs of producing the kilowatt-hour.

The question of depreciation and how it will ultimately be handled is another of the more important problems facing

(*Continued on page* 246)

Electric Utilities and the War Production Program

By W. H. Harrison

Director, Production Division, War Production Board

An address before the Annual Meeting of the Edison Electric Institute, New York, N. Y., June 11, 1942

ORDINARILY, and in round numbers, industrial activity represents some 30 per cent of our national effort. Much of it is concentrated in relatively small geographic areas—even though it is wide-spread from a national standpoint.

In the brief span of two years, marking the period of our defense and war effort, industrial America has increased roughly 50 per cent. The groundwork is well under way for a further substantial increase.

Much constructive thought and effective action have been put into the pattern of this greatly enlarged industrial effort—a pattern which gives full expression to military and to broad social and economic considerations. Woven into this pattern are extensive industrial operations in heretofore non-industrial areas. You are familiar with the situations that had to be dealt with to care for this phenomena, and particularly the extent to which utilities—transportation—power—gas—communications are interlaced in this expansion.

You know, too, that in several important situations power determined the location of strategic industrial projects. As time goes on I would expect availability of power will have a greater influence on the pattern of the expansion than has been the case heretofore.

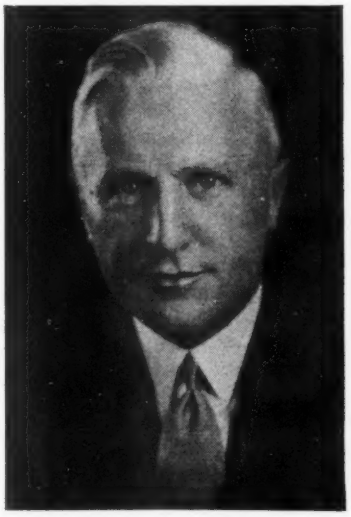
In the power field Mr. Kellogg dealt with much of this firsthand—dealt with it as a business statesman and as the gentleman and scholar we all know him to be.

* * *

The question sometimes is asked, "Is the power industry, private and government, keeping pace with demands of war?"

The record is clear as to this—power is meeting war demands—so much so, power and war production are synonymous.

Clear cut evidence of this is to be found in the fact that in no instance, that I can recall, has production been delayed because of lack of power. Sure,



MR. HARRISON

there have been instances, and there will be more, where feeder and distribution lines, transformers, systems inter-connections, contractual arrangements and a lot of other considerations appeared to be imponderables—but to my knowledge each was cleared up in advance of need, even though there was a tight squeeze now and then.

This is to the credit of the industry for its ingenuity and effective integration of facilities in meeting the current situations, and for its vision, forward-looking planning and sound engineering and operation over the years past. In this, of course, recognition must be given to the suppliers and manufacturers.

Heavier demands lie ahead—they are principally in the field of the creation of synthetic materials. Rubber, high octane gas are the outstanding examples. I know of nothing thus far which suggests that these future war demands will not be met. On the other hand, there are factors of material and of manufacturing capacity sharply limiting the manner in which this will have to be done. I shall touch on these in just a moment.

* * *

So much for the availability of power—of equal importance is the necessity for continuity of operation or dependability of service.

To the extent human foresight could envision the future, every effort has been made to create dependability of power supply. I wish time were available to bare the blueprint of the steps taken to insure this.

To illustrate, each war plant has been designed and utilities provided so that there would be alternate routes and at least two separate generating sources. In some instances this has involved standby generating equipment where it was impractical to create a second service line or a second generating source.

These decisions did not grow out of known or anticipated weakness in power supply—but rather from our insistence that no stone be left unturned to insure continuity of operation. In this connection I want to emphasize that power systems continue to be dependable—and to suggest to you how important it is that this continue to be the case despite heavier and more exacting loads on the one hand, and limited supplies and generating capacity on the other.

* * *

War production is now moving into the second stage of its operation—where the limiting factor is materials to feed the manufacturing capacity created.

We are rapidly approaching the time when practically every pound of metal is required to feed the war machine and the industries essential to movement of that machine. In the bulk of the metals—one pound used for anything other than this direct war need means one less output of war goods or the use in war goods of some inferior substitute. Be assured no emphasis on conservation of metals is too great.

All of this in turn brings about necessity in every field for working on closer margins and with appreciably less standby equipment than ordinarily would be desirable. We may now well be at the point where perhaps no longer can standby power equipment be fur-

nished, or even conceivably where alternate service lines cannot be built.

In addition to this material situation in the power field, there continues to be an equally critical situation limiting the manufacture of generating equipment. As you well know, generating units, steam boilers, valves, etc., are in direct and immediate competition with ship propulsion machinery, compressors, equipment for explosive plants—synthetic materials—and all the variety of things that go to give life to the war machine.

Those of us brought up under good engineering practice have become accustomed to look upon margins—safety factors—spare equipment, etc., as essential. Experience demonstrates that these practices are still sound—on the other hand, there simply is no longer the where-withall, and we have to learn to get along on stricter rations—to tighten our belts in every direction.

Naturally at a time like this you hear some comment about the extravagance of this, that or the other thing. I think we all ought to keep in mind that those observations are made in the light of the pressing need today of materials and manufacturing capacity, and I have seen nothing in the utility field to suggest that the practices which we heretofore thought were sound and which experience has proved to be sound are now unwise. They are still sound, but we will have to forego them, and I think we ought to look at the situation rather in that light than in the light of suggesting that we perhaps have been too extravagant in the past.

With standby equipment perhaps no longer standby—with inter-connection only limited standby—with manufacturing capacity no longer available—you may well be at the point in specific instances where standby or reserve or margin is in the commercial use of power. Fluctuations in the war load—emergency conditions growing out of temporary loss of generating capacity—may have to be taken up—here and there—in curtailment of commercial and civilian use. There is a job to be done in anticipating this and acquainting the public of it in the areas likely to be affected.

I am mindful that in many instances additional generating equipment has gotten badly entangled in the on-rush of war in some of the manufacturing plants, and we are making every effort to clear up partially completed generators, etc., so that in reality the decks can be cleared for war implements. We have had some very interesting experience with one or two of the larger manufacturers where it has been possible with relatively little work and little material to clear out some rather large generating units to the direct benefit not only of the penerating units, but to the plant itself, so that direct war work can go on.

* * *

May I by way of emphasis repeat:

The record is clear—your industry has kept abreast of demands—continuity of service has been excellent—all of this in face of unanticipated large and exacting demands.

Much of this has come from forward-looking provision of facilities—some of it has come from taking up margins.

Additional demands lie ahead—opportunity to create additional capacity—to extend service lines—to do more interconnecting—become more limited. Materials and manufacturing capacity simply are not available to the extent they should be. Better load control—improved operating practices—closer engineering standards, all will have to be resorted to.

Mindful as we all are of how fundamental ample power is to production—yet you will be asked to continue to scrape the bottom of the barrel to haul out more kilowatts—the wizardry of your engineers and operating men, rather than copper and turbines of the days past, will have to produce these additional kilowatts. We are all hopeful there are rabbits still in the hat.

* * *

Perhaps brief reference to war production itself speaks more persuasively than anything else of the adequacy of power and its relation to the war job.

The production scoreboard is very impressive. It is my business to work with it close-up in all its ramifications.

At the time the President, with great vision, spelled out the pace-making items of planes—tanks—ships—guns—the base on which we had to build seemed rather narrow to pyramid such a load, in such a short period. We now have a base not only broad enough to handle the assignment for 1942—but we see in it a base broad enough to handle the even more astronomical figures spelled out for next year.

We are forced to over-reach ourselves on facilities—materials—and manpower. Each in turn will be the limiting factor in arriving at maximum production.

You all know in your own business what it is to have a staggering milepost—you know how discouraging it is when you are only partly on your way—to measure from the top down—rather than measure from the bottom up. My reference today is from the bottom up.

I think we can now state with reasonable certainty—that in broad measure 1942 objectives are in the making—to assure these objectives industry and government must continue to work together as a team and each of us as individuals must stay in there pitching.

While output in most of the specific items is abreast of schedule—yet current levels are far from what the monthly rate must be to reach the goals set.

Comparisons are of little value for the reason that this or any other nation never attempted to do what we are now doing. Considering the yardstick of the last war, naval and merchant shipbuilding—construction is several-fold greater.

As to be expected—in aircraft—there can be no comparison. One would expect, however, in the field of ordnance—guns—ammunition—explosives—tanks—motorized vehicles—some comparisons might be drawn.

Rounds of small arms ammunition last month were substantially greater than the peak monthly rate of the last war, which was reached in the fall of 1918. Similarly, explosives—T. N. T.—production in May was over three times the peak *daily* rate of the last war, which was reached at the time of the Armistice. Incidentally I think explosives represent the second largest consumer of power.

Despite the fact that last year there was quantity production in many of these items, this year—each month—the increment of increase of many critical items has been 30 per cent over the preceding month. May actually being four times greater than November and—as contrasted with May of a year ago—some 12 to 15 times greater.

This is pretty much the story for all items.

* * *

In the final analysis, basically, like all other wars this is a soldiers' war—the same strategy—the same principle of weapons—the same courage—the same imagination—the same inspiration—that carried victory centuries ago—will carry it now.

On the other hand and by the very nature of things weapons hold the balance of power. Pure science—applied engineering—private initiative and business management—all combined have their mark on the weapons and I am modestly proud of my association in the

(*Continued on page* 248)

The Role of Electrical Manufacturers in the War Effort

By Chester H. Lang
Vice-President, General Electric Company, Schenectady, N. Y.

An address before the Annual Meeting of the Edison Electric Institute, June 11, 1942

FOURTEEN months ago someone assigned me the job of reporting to the Edison Electric Institute at Chicago, what the electrical manufacturing industry was going to do for them, at a time when we were just beginning to fumble actively with what we termed a defense program. To the best of my ability, employing knowledge and facts that obviously had only a day-to-day legitimacy, I tried to carry out that assignment. In less than nine months we were at war. Something new had been added; a great many old things had been taken away.

Quoting from one speech to help out another is a questionable practice at best. But perhaps you will let me use against myself a trick employed by congressional investigating committees in Washington, namely, to quote away from its context, something I said then:

"The electric kitchen may prove to be more important to our continued existence than a flying fortress . . . I see no reason why we, who make the tools of electrical living, or you, whose job it is to see that they are applied on a wide scale, should abate our efforts just because an emergency exists, or because, for a limited time, we have to wrestle with such difficulties as curtailed production, substitute materials, and the temporary intoxication of increased payrolls."

The rest of it was nowhere near that bad. But what strikes me now, about the things we were saying then, was the presumptuousness and the blindness with which we concentrated on our own little patch of garden. It was several months before we could pull ourselves out of the backyard and let go with all our strength in the front lines. I think we have done that now, as a nation, rather than as individuals. Our domestic isolationism sank under the waters of the far Pacific, and as we tasted the brine and blood and angrily surveyed our wounds, we became once more a democracy at war—thus re-

MR. LANG

creating that miracle which Europe always thinks it has seen for the last time.

In my heart I did not believe, fourteen months ago, any more than you believed, that we could continue business as usual. We were simply reluctant to give up the ghost. Now that we have put all that behind us, perhaps we have the right to draw certain conclusions about the electrical industry without being accused of forgetting the job in hand. Night and day, every day, we of the electrical industry have to wear the blinders of war and have no business concerning ourselves with much else than men, tools, plants, and a production schedule that can never produce enough, nor produce it fast enough, until the war is won. I for one want nothing better than that. But notwithstanding all that, notwithstanding the fact that in my present assignment I have my nose, *and* my heart, very close to the desperate issues of this war, I am nevertheless impressed each day anew with the ultimate destinies of this business of ours.

Conflict which needs everything we can give, simultaneously points up our common future. And that is because electricity is not only a terrible weapon of destruction—it is also a magnificent tool of peace. It will not be denied, unless we ourselves deny it with foolish conservatism and utter lack of courage. Every ton of metal that comes crashing to earth as the direct result of our efforts can only rise again and become useful with the help of kilowatthours. Every house that lies bomb-shattered rubble because of the cunning devices we have engineered can only become a home of comfort and safety and pride and efficiency through the efforts of this industry. No man-made business can raise the dead, but the tragedy of their wasted lives can be balanced somewhat if we exert ourselves to produce the glorious future that is within our power.

It is a great temptation to take that talk of fourteen months ago, point by point, and bring it up to date. (We noted then that every product of the electrical industry embodies the discoveries of the scientist, the creative genius of the engineer, and the skilled work of the master craftsman.) Our electrical manufacturing industry was then scheduled to build a billion dollars worth of war material, and it looked like a mighty burden. That was a billion *on order,* from the entire industry, and no man knew how soon we would be able to convert and design and train and get out the goods. What happened? I can't tell you (and wouldn't be allowed to, probably) what the electrical manufacturing industry as a whole has done to date, but in 1942 my own company alone will produce something like a billion in war goods. You can do your own multiplication to get the industry figure.

Every one of you, in a way, has ridden a convoy or wrestled a destroyer through the cold waters of the Atlantic, and has flown with Doolittle over Tokyo. Propulsion turbines, supercharg-

ers, auxiliary motors and generators, radio—all of the ingenious combinations of power and light and control which are finally being thrown against the enemy—are the children of this industry, derived from its ingenuity, tested by its toil and patience, improved by its restless appetite for a better way sent out to battle with its advice and blessing. Like all parents, we send our pride and confidence with them into battle. Like good children, they will return from the war to show us a few new tricks. We will have better turbines and motors, better communication equipment, and priceless new knowledge as a result.

There has been one curious and perhaps unexpected result from cutting-off of consumer electrical goods. Several months ago some of us timidly suggested that perhaps we were not just fighting this war to protect and extend the old freedoms and beliefs. We said maybe we are fighting also for our way of living, with its greater comforts and efficiency, for the shorter hours and higher wages, for the sheer pleasure of living well. To be honest, we meant, in a narrow sense, that we were fighting for ranges and refrigerators and better light and well-planned homes. We were timid, as I say, because this didn't sound quite decent, to be spoken of in the same breath with the agony and sacrifice of war. And yet I am convinced that concept was all right. As the accepted conveniences of our civilization were frozen and rationed, people suddenly became conscious of the shining, useful things that they had taken for granted. At first they were annoyed and then they became mad—at Hitler and the rest of the bandits who were reaching across the oceans to pinch and harass their private lives.

Now you may say that this is a small and unworthy kind of war aim, to advance when such elemental issues as freedom or slavery are at stake. But I am not so sure. None of us would actually go out and storm a pillbox to save his electric refrigerator—but all of us would fight for our right to enjoy the fruits of progress, for the right to eat well and wear good clothes, for the right to educate our children and turn them loose with an even chance to convert their talents and ambition into wordly rewards—and right there I think we have something. I subscribe to the thought advanced by the president of my company the other day—that the millions of young Americans in the armed forces are not content to risk their lives just for the old freedoms guaranteed by the Constitution. They are not fighting for the past alone, but for the future. They want to come back to unrestricted opportunity, to an enjoyment of all the wonderful things that scientific research and enlightened free enterprise can give them. And they don't want it on a "gimmie" basis. Our peace-time products, on both sides of the watthour meter, are practical symbols of this war objective. For that reason they *are* important.

Again, more than a year ago, we spoke of some of the specific jobs that had been entrusted to the electrical industry —equipment for land, sea, and air, involving power, control, and light. These were things we knew we could build because they were part of our experience, and the only real obstacles were the pressure of time and the rapid expansion called for. The end of that expansion seems to be in sight. Now the job is to use that new capacity for all it is worth. We have already beaten time, again and again, in many lines. Often, just as we were well on the way to solving one schedule it would be doubled or tripled and the heat was on all over again. This has been no easy job, but I don't think there was ever any real doubt that it could be done.

We talked about the secret developments in research and engineering laboratories, and I am sure that you who are a part of this industry were reasonably impressed to hear that several hundred scientists were hard at work trying to win the war with physics and chemistry and electronics. But being part of this industry, you were probably a little uneasy, also, and silently hoped that these mysterious developments would manage to get out of the laboratories before the war was over. In bringing this report up-to-date, I would like to tell you—and this you must take on faith—that a good share of these developments are now production realities, and some of them are already helping to destroy our enemies.

We can take a searchlight beam and tie the end of it in a knot about an enemy plane. We can take an automatic pilot of a bombing plane and endow him with skill and cunning that a human pilot can never have, the flesh and blood being what it is. We can increase by many times the margin by which a projectile can miss its mark and still be destructive. The presently untellable stories of scientific achievements bearing on this war will one day be the material for a fascinating record of mass ingenuity and inventive skills.

So much for time that is past, and the use we have made of it. What about June, 1942? On the credit side of the ledger are the recent military successes by our side. The chief of WPB has stated that we are over the production hump. In fact, as we look around, many seem to feel that the only real problems left are rubber tires and gasoline.

But, gentlemen, I say to you that only *one* really destructive "bomb" has been dropped *by us* into the camp of the enemy. It exploded when the United States entered the war, and when this fact was made known to the peoples of the Axis countries, according to our recently returned newsmen and diplomats. It didn't knock over any troops or tanks. It didn't cause anybody to throw up the sponge. But it made them think—because their leaders had said that this would never happen. This bomb brought down a little plaster in the neat, tight, compartment of the Axis mind. But by *itself* it will produce no victory for us.

Furthermore our enemies have a secret weapon which haunts me, and that is poison gas—not mustard or phosgene or any of the other pleasant little concoctions—but the poison of our own complacent overconfidence, fed by misinformation and an overeagerness to march in a victory parade. This is poison because it can knock us out for good. It is to be feared because it is so pleasant to take, and every one of us is guilty of inhaling it at every opportunity. Too many of our leaders, right now, are manning the ejectors of this dangerous gas.

What makes us so light-hearted? Didn't we suffer terrible damage in the air, on land, and on the sea at Pearl Harbor? Haven't we lost the Philippines? Haven't American soldiers, sailors and marines at Bataan and Corregidor been humiliated and disappointed and crushed? All the fine words and rosy forecasts in the morning paper can't hide the fact that we have been beaten back all the way to Australia and India and the Arctic Ocean, that we need a convoy to get to England, and that more than 250 ships have been torpedoed on our own Atlantic doorstep. And we talk about the Axis crumbling. Up to this very moment we have been thoroughly licked.

What is meant by "we're over the

hump"? Only that now we have the mold in which to cast the bullet. We still have to make it, load it, take aim, and fire. This feeling that we have labored mightily and can coast a little is the most dangerous doctrine in the world. It doesn't have very much to do with making or selling electric power, but I have no apology for laboring the point here because there is nothing more important in the world today.

In Europe and in Asia we have exhausted, discouraged peoples; they can be either our best friends or our worst enemies in the days ahead. Whichever it is, will depend on our performance. Some of them will die in either event, and they know it. Perhaps we Americans have gone too long without a Valley Forge. I hope we can win without too much dying, without any starving, and with as few tears as possible—but these tragedies on our own soil and in our own family are the elemental fires that burn away the rich fat of the years.

The Russians, as a result of a lot of thick, gloomy volumes of literature, came to be known early in this century as a nation of talkers. Over tea and vodka they poured out their miseries in endless conversations that ran into hundreds of pages, while their children starved and their brothers were driven to Siberia and their natural wealth was wasted. I wonder if they will ever talk like that again, after Leningrad and Karkhov and the blood-drenched Don River? There is a haunting similarity today in the streets and hotel corridors of Washington—the city that has ceased being a city and become a situation, obsessed with gasoline ration cards, the continuation of NYA, or who held back what patent ten years ago.

I want to make a correction. These matters *do* have a lot to do with the conduct of our business, because our business is winning this war, and nothing else. We are piling up tanks and guns and shells in our plants and on our wharves. We are lining up young men in our camps and teaching them how to fight. These are the things we have always known how to do, and we are doing them again. We must keep on doing them until this ghastly mess is finished.

As of today we are losing the battle of transportation. We need ships—transports and submarines and escort vessels. Until we swing the tide of that battle over onto our side, all the war material we can produce with our vaunted production machine is so much scrap metal, no better than the tons of supplies that were blown sky-high in Burma because we didn't have the right things in the right places.

And what makes a ship? Many things. Wood and steel and welding electrodes and guns and man-hours and electric power—to name just a few. Men make ships and all that goes into them. America makes men. Each of us has at least two responsibilities—doing our job and living up to that job. For eight or ten or twelve hours a day we must draw largely from within ourselves the power to concentrate on turning our own little crank. For twenty-four hours a day we need to concentrate also on the other thing, which means so living that we not only deserve the traditions that lie behind, but the opportunities that lie ahead. We're not doing that if we chisel and backbite, if we waste hours and squander money, or if we delude ourselves with visions of our past glories and of our indestructibility.

Despite everything that has been said of our progress of the last several months, we had better not even pause to pat ourselves on the back. Of course we built new factories. Of course we trained men. Of course we subscribed tons of money to fight our war. Of course we are building in an incredibly short space of time some of the best weapons the world has ever seen. We should be ashamed and chagrined if we had done anything else. There was never anything but conviction among Americans generally that we would do what was expected of us production-wise. In fact, it was the ordinary man who first became uneasy at our seeming slowness and demanded that we hold something more terrible than a blueprint or an appropriation at the head of the aggressor.

Now that we have gotten over the hump—and I think Mr. Nelson meant only that we had emerged from the welter of make-ready and pilot models—we have the real job yet to do. We've been training. Now let's fight, each with the weapons or tools he knows best. Let's blast and pound and slash, day after day, month after month, year after year, if need be, always bearing in mind that it is not the single blow that counts, no matter how mighty, but the cruel and tireless rhythm of sustained effort, a rhythm that persists until the piece is finally played out.

There has been some criticism, of the grim and uncompromising manner in which the war effort has been put before business. One answer is that there is a terrible efficiency in death and destruction. We had to be hurt, and hurt badly, before we could rouse ourselves. In war there is little time to consider what lies beyond the range of our guns. But certainly this audience can have no doubt of the positive rewards of victory, for there are rewards over and above the mere fact of our continued existence. In the concluding phase of this report I would like to sketch hurriedly a few things that concern you.

When Hitler decreed that this would be a mechanized war dependent upon mass production and then proceeded to make it impossible for us to stay out of it, he asked us, in effect, with the usual Teutonic lack of psychological foresight, to choose our favorite weapon.

It takes a specialist like Lieut. General Knudsen who has toured our war plants to appreciate the miracle of mass production that is taking place. As Knudsen would put it, "We didn't know our own strength." It took cold, clammy fear, striking at the heart of a nation, to teach it that it was a mere tyro in the practice of the skill for which it has seemed to have a God-given aptitude—mass production. You simply have to get out and visit the General Electrics, the Westinghouses, the Boeings, the Willow Runs, the Warner & Swaseys, the shipyards to see the miracle of mass production that is going on.

Most other nations, even before the war, envied our ability to mass produce at low cost (despite high wages) canned soups, automobiles, electric kitchens, and kiddie cars, but now, in our desperate plight, we have learned that we can extend our mass production methods to tanks, locomotives, flying fortresses, ships, and finally to that Great Individualist of the machine age—the steam turbine.

One factor that has made mass production of heavy, heretofore tailor-made, apparatus possible has been concentration on a few standard ratings—standardization unwillingly accepted under the stinging lash of time.

Naively almost, we have been astounded at the savings in time and cost that have resulted. We build a shiny new plant somewhere west of the Alleghenies with a capacity to produce nine 30,000 HP ship-propulsion turbines a month. We whistled bravely, knocked on wood, and kept our fingers crossed because at Schenectady where we've al-

ways built large turbines—practically no two of them alike—we have never averaged more than three or four units of comparable size per month.

Are we going to meet that seemingly blue-sky schedule of nine units per month? No, we're going to exceed it by producing at least 15—thanks to duplicate manufacture of a standardized design. This may seem like the last place to divulge costs, but inevitably such a program yield appreciably lower costs. As taxpayers you will benefit by lower prices to the Navy. The same experience is being encountered in our production of other highly technical war materials and I haven't the slightest doubt that this is true throughout the elecrical manufacturing industry. Again as General Knudsen said, "We didn't know our own strength."

Another thing we have learned—and this is most significant—standardization puts no ceiling on development. Conversely, richer dividends in higher standards of quality, and performance can be expected because of the ability to concentrate engineering talent on designs that offer the greatest potentialities for progress.

Bearing this in mind, may I ask a question: If we can make such savings in time and cost for war production, can we not do it for you for peacetime production?

As an industry, you make the most standardized product in the world—the kilowatt hour. And as an industry, you have alertly furthered the advancement of standards—meters, distribution transformers, lamps, etc. But shouldn't you, and we, in the light of what we are now learning, vigorously explore the possibilities of extending this standardization to heavy apparatus?

All wars teach lessons and advance technology—at great cost, to be sure. We shall have failed in our duty if we do not make the most of, the helpful lessons this one is teaching us. To us in this industry one lesson can be: That there is no obstacle other than habit or tradition that stands in either your way or ours to block the extension of standardized manufacture, with all of its resulting advantages, to the substation, the transmission system—yes, even to the generating station, and in the broader sense to the cost of supplying electricity.

And so, having come at last through a somewhat unorganized report of the various activities, tendencies, and possi-

(*Continued on page 227*)

San Diego Gas and Electric Company Wins Coffin Award

THE San Diego Gas and Electric Company of San Diego, California, received at the annual meeting of the Edison Electric Institute the electric light and power industry's most honored symbol of accomplishment, the Charles A. Coffin Award. The top-ranking competitive prize in the electric industry, it is awarded annually to the company achieving "the greatest advancement in its operation and physical plant, thereby making a distinguished contribution to the development of electric light and power for the convenience of the public and the benefit of the industry."

The Award, established in 1922 in memory of the late Charles A. Coffin, founder of the General Electric Company, consists of a Gold Medal, a Certificate of Accomplishment and $1,000 in cash for the employee's benefit fund of the winning company. Its presentation was made by H. P. Liversidge, President of the Philadelphia Electric Company and Chairman of the Prize Awards Committee of the Institute, and was received in behalf of the San Diego Gas and Electric Company by L. M. Klauber, Vice-President and General Manager.

Basing the award on the San Diego Company's "splendid performance in meeting greatly increased industrial and defense loads and serving a large added population," the citation of the Prize Awards Committee stated:

"A normal growing residential community was suddenly converted into one of the fastest growing industrial and defense areas of the nation. Industrial power sales in 1941 increased 71 per cent on top of a big increase the year before. Failure to meet these new power demands would have handicapped our war effort. Wise planning of the company nicely adapted to the requirements of the local situation and excellent management successfully met the service needs of the region at a relatively low increased cost.

"During this same period the operating practices of the company were bettered and public relations were enhanced through the fact that the company and its officials took so important a part in advancing the general interests and welfare of the territory served."

Judges for the award were Dr. Karl T. Compton, President of Massachusetts Institute of Technology; Charles W. Kellogg, President of the Edison Electric Institute, and H. P. Liversidge, President of the Philadelphia Electric Company and Chairman of the Prize Awards Committee.

Charles A. Coffin Award—Stuart Crocker of the General Electric Company, representing the donor, L. M. Klauber, Vice-President of the San Diego Gas and Electric Company, accepting the Gold Medal for his company and W. W. Trench, Secretary of the Charles A. Coffin Foundation.

Sauce for the Goose

By Charles A. Collier
Vice-President, Georgia Power Company

An address before the Annual Meeting of the Edison Electric Institute, New York, N. Y.
June 11, 1942

AS a preface, let me say that everything we undertake must be judged first on the basis of what it will do to help win the war.

Solomon once said, "Where there is no vision, the peoples perish!" America was built out of a wilderness by men of vision—men who dared to look ahead. America will continue to build and progress only so long as we persevere.

It is no shallow statement when I say that to win this war utilities must continue to go forward, to look ahead, regardless of what anyone says about not thinking or talking about post-war conditions and plans.

The by-problems of this war are many and new. What they are—how they affect us—and what we can do about solving them—these are things we want to talk about, for the by-problems of war are the things that affect public relations, good-will *revenue,* and net earnings.

Giving and Giving Up

The utility's contribution toward winning the war includes both *giving* and *giving up*. That is not something special with us; everyone must both *give* and *give up*, if the war is to be won. As an industry, we are *giving* everything we can toward supplying power, transporation and other services, giving men, giving money in greatly increased taxes, and many other things. We are *giving up* many established practices and policies that have played an important part in the industry's progress. As the war progresses, still further changes will be required.

Significantly, many of the things we are giving up, most of the changes in basic policies and practices, are in those activities most directly related to *growth and progress*. Growth is no longer permitted in the usual sense.

Hold the Load

We have come temporarily to an end of an era, an era characterized by steady and rapid growth stimulated by aggressive load-building programs. Now we

MR. COLLIER

are in an era when load-building is temporarily "out" and there will be no growth except that directly resulting from the war program at present.

Value of Customer Appliances	$10,600,000,000
Value of Co. investment to serve them	3,978,000,000
	$14,578,000,000

Until the war is over, the best we can hope for is that our non-war *load will remain at present levels*. But we cannot be certain that it will. On the contrary, the possibilities are that it will decrease, *unless we take steps to prevent it.*

You either go forward or backwards. Our industry cannot afford to slip back. And there is no disloyalty to the war program in our trying to avoid unnecessary losses of business of the kind that result from a cessation of immediate progress.

We need to hold the business we have built up, by great effort over a long period of years, for many reasons. Here are a few:

1. Our usefulness in the war demands that we keep healthy and strong. That means maintenance of net earnings.

2. Losses of net revenue now are especially serious when taxes are sky-rocketing and when so much money is needed for new construction to serve increasing war loads.

3. When the war is over, and war production ceases, a terrific readjustment will be necessary. With excess capacity and no outlet for it, our only cushion to break the inevitable fall will be the non-war loads, especially residential and commercial. The bigger they are, the easier the fall.

4. Experience has shown us in my Company, and I feel sure you have found it true in your companies, that load-building also builds customer good-will. Our most satisfied customers are those with the highest KWH consumption; the greatest number of complaints come from low-use customers. If we, *by our negligence,* permit unnecessary losses of load to occur, we can also expect a loss of customer good-will. Conversely, losses of customer good-will produce losses of KWH consumption. In a period like the present, when we must constantly say "No" to the customers, because of war restrictions, and when load-building has been suspended, we can expect losses of good-will, and KWH consumption, unless *positive steps are taken to prevent them.*

5. If any serious losses of good-will occur, if we come out of the war with public antagonism instead of friendship, we will expose ourselves to dangers of the first magnitude. We must never forget for a moment the threat of public ownership. In the post-war adjustment, our competitors will be just as hungry for business as we will be. And when they make a drive to take over our business, our greatest protection will be the public's friendship. We cannot afford to lose it!

We must *hold the load, hold good-will, and hold employe spirit.* That is the first time I have mentioned the importance of employe spirit, but it was not because of its relative importance that I have failed to touch on it up to now. Quite the contrary. One of the most important things we have to guard against, as a positive protection against the loss of good-will, is company *complacency.*

No Place for Complacency

Few thought we had to really do anything to encourage the public generally to use the products of the utility business up to about twenty years ago. Perhaps it was a perfectly natural assumption. The public came and took

our products from us. New demands and new needs for service grew up largely of themselves, unprompted by us, and served to absorb much of the expansion we found possible. That very situation, I think, has in many instances been our undoing.

We, along with many other businesses, took on an attitude and a spirit of complacency about the business, since we had been taught for so long that this business was a monopoly and that the public *had* to do business with us; that we had a product so desirable the public could not do without it; that the public would come and take our product even if we were a little bit averse to their having it.

This attitude permeated much of the industry, and created an air of indifference to what the public felt it was entitled to have—. That very attitude of complacency and contentment brought on many ills. Those ills were long in the making. It seemed to take us a long time to wake up to the fact that possibly we ourselves might be able to do something about them. And sometimes it seems we haven't awakened yet!

Almost twenty years ago, Mr. Preston S. Arkwright, president of my Company, made this statement: "This business cannot be run on constitutional guarantees or on a sense of justice of members of utility commissions, or on injunction suits. Its success depends, at last, on a sympathetic understanding of its problems by the masses of the people."

Why is it that we agree with statements like that and yet do little about it? Complacency is like rust. It starts with a tiny speck. Left alone it spreads and spreads until it eats clean through. Then it is too late to do anything about it.

If there is a feeling on the part of the industry that business is good enough, that we don't need any more, that there is not much we can do about it anyway—well, steps should be taken, and taken quick, to correct that attitude.

We are inclined to put too much emphasis upon substitute ways and means by which we can get our job done without knocking a little skin off of our own knuckles. We spend more time figuring on how we can get someone else to get and hold our business for us than we spend on getting and holding it ourselves. That is a form of complacency. And complacency soon leads to fear and dread of the consequences.

"Standin' and dreadin'" is not going to get us anywhere but into trouble.

There is no place in the electric industry for complacency!

Losses of Good-Will

Here are three other things that result in the loss of good-will, especially in war time:

ONE. Unavailability of appliances. When Mrs. Jones wants a new refrigerator and she is told that there are no refrigerators, you've got more to do than simply blame it on the war. You can blame it on the war, but the customers are going to blame it on you, deliberately or sub-consciously, unless they understand the reasons why.

TWO. Loss of load. I've already covered that subject, but I want to refer to it again as a cause of losing good-will. If such a chart were possible to make, I'll venture that a load-growth line and a good-will-growth line would come close to being one and the same. Just remember—the loss of good-will is coincidental with the loss of load. Hold the load and you hold good-will.

THREE. Irritation from inconvenience. This covers a multitude of things. Inconvenience caused by the inability to use appliances. Inconvenience caused by "blackouts." Inconvenience caused by power curtailments when they occur. Inconvenience caused by allocation of power, or by restrictions on the use of power. Irritation caused by delay in rendering service.

I have given you three causes of good-will loss. Here is a fourth, and it is extremely important. *Inconvenience caused by denial of service.*

You are familiar with the restrictions placed upon us by the government. Without special authority, we cannot run a line more than 250 feet and the cost cannot exceed $500.00. WE understand these restrictions. WE know why they are necessary. But does that man who has bought a lot and wants to build a house THREE HUNDRED feet from the end of your line understand it?

What are you going to do about HIM? Blame it on the war and let it go at that? Or, is some member of your organization going to take particular pains to explain the circumstances in detail and do everything in your power to make him happy?

Unless they do—and do a good job of it—that customer may SAY he understands, and maybe he will, but deep down he is going to hold YOU responsible, somehow or other. The War Production Board and its many rules are too far removed from his mind, and his desire for that home, to make any impression or lessen his desire.

Service denials are affecting other than residential customers. And these cases are even more difficult to handle. *Personal contact alone* can be your assurance that these customers understand the reasons.

You realize that some restrictions are resulting in the use of substitutes which in turn may result in sub-standard service for some customers. But today *sub-standard service is better than none at all.* We at least should not have to tell our customers that we cannot serve them at all. That would be disastrous.

Let's make of the various restrictions *a challenge to our ingenuity and imagination.* Let's find ways of using substitutes to provide service. We cannot afford to sit back with our arms folded and tell customers we cannot serve them —not so long as we can devise ways, however sub-standard they may be, of serving them.

But remember this. You can't go in and render sub-standard service and say nothing about it. Surely customers have a right to know what to expect, and who can tell them but us?

Unwillingness vs. Inability

There is a marked difference between the *unwillingness* to serve and the *absolute inability* to serve. This difference has got to be explained to the customer.

We have a salesman over in Carrollton, a little town in our territory, who made a remark at a sales meeting, when we were discussing commercial rates, that has stuck with me. This salesman said, "You can explain it *to* them, but you can't understand it *for* them."

In this matter of service denial, and various restrictions that affect our customers, we are going to have to go the whole way and *come as close to understanding it for our customers as possible!*

Importance of Good-Will

So far, we have said nothing about the importance of maintaining good-will. It shouldn't be necessary. By now we ought to know its importance. Most industries take it for granted that it is important. They don't have to be sold on it. We shouldn't have to be sold on it either. And I won't say any more than enough to *remind* you how

important—and especially in war time—good-will is to our business.

Prior to the last war, and during it there was a good nationally known roll-your-own tobacco. Remember it? Well, during the war that tobacco company had so much business it didn't want any more and stopped activities that built the business. That brand of tobacco died a natural death soon after the war—despite efforts to breathe life into it again.

There are numerable examples. But one will do. I almost want to apologize for mentioning it—for reminding you of the importance of maintaining customer contacts during war time, or any other time, for that matter—because, as I have said, it ought not to be necessary, and I hope it isn't. But the fact remains that *some* folks forget about it! The manufacturer of that tobacco did!

* * *

Our business is unlike any other business. We have to expand whether we want to or not; sometimes whether we are able to or not.

We cannot obtain private money for capital expansion if our net revenues are cut to the dry bone. Then the one remaining source of capital, for War Plants at least, is the government. But you don't stand a ghost of a chance of getting money from the government or anybody else on terms you can accept, unless you have the good-will and confidence of the public you serve. If you do have it, your representatives in public life know it. Then the representatives of the government know that there is a good chance of getting the money back. And you have to pay it back, you know!

Even higher taxes have a direct bearing on good-will. It makes it tougher to serve satisfactorily, and consequently tougher to maintain good-will. And at the same time, you've got to have the good-will to get the money to expand and serve. The ability to get capital is in direct proportion to good-will.

There are many other by-problems of war that affect this industry of ours. In fact, I can't think of anything that doesn't. You are familiar with them. I have already mentioned some, and I'll simply name a few others. New industries coming into the territory. The attempt to bring to an end the age of private initiative in this country. Higher operating costs. Rates. The list is a mile long!

What, then can be done under existing circumstances to hold good-will? Let's get down to brass tacks.

A Program of Action

There must be a program of ACTION. A program suited to the times. A program to make the utility of more direct and greater usefulness to customers than ever before. We have skills and experience in many lines; our customers have needs of many kinds resulting from their individual readjustments to the war. We need a program that will bring those skills, experiences and needs together, with a sincere purpose of helpfulness *to the customer.*

If we are genuinely helpful, if we do actually meet the customer's needs, we need not worry about retaining their friendship and holding their friendship and holding their business. Satisfied customers do not desert you, and when the opportunity comes they will select you in preference to any competitor.

Many utilities have launched Customer Service Programs of one kind or another. This, in my opinion, is what is needed. Such programs are compatible with the war program, for the war has made us temporarily less a commercial business and more a service business. Such programs will retain something we must not lose—personal contacts with customers, and the revenue as well.

Rightly conducted, service programs can have a tremendous influence. But beware of the ones that go off in a half-cocked manner.

Let's take a brief look at the various classes of customers and see what can be done for them.

For one thing, we can teach our customers how to make their appliances and equipment last longer and serve better; how to make more efficient use of their electric service.

The industrial power users need close attention right now. Many of them are faced with the problem of converting to war production. The small plants and shops, particularly, are lost when it comes to this. They don't know how to go about getting contracts. We can and we should make it our business to help them. The industrial power engineer, with his special knowledge, is in an excellent position to do that.

In our Company the industrial power engineers have been spending practically all of their time for the past many months making surveys of mills, plants, and shops in our territory. These surveys show the kind and quantities of tools, machinery, and equipment available.

We have just completed an exhaustive study of the best way to convert our Georgia industries to war production.

I want to tell you about just one of the direct results from the study. In a small town in our territory there was an aluminum-ware manufacturer employing about 165 persons. There it was the sole industrial plant of any consequence. When aluminum was no longer available for civilian goods, this plant had to shut down and throw about 150 families out of a source of income. That was a severe blow to a small town. Through the efforts of our industrial power divisions, this plant obtained some war contracts and today it is running full blast and employing even more persons than formerly. Do the people in that town look upon my *Company as an asset?*

We have an opportunity to show industrial customers, in many cases, how to make better use of their electric service; how to make equipment last longer and serve better; just as we have the opportunity of rendering similar service to our residential, commercial and rural customers.

Farmers are faced with the call for increased production on one hand and men for the fighting forces on the other. Here is an ideal time for electricity to play a vital role. It's up to the rural engineers to keep electric equipment on the farms and dairies going; find wider use for it; educate rural customers in efficient uses of electric service.

Commercial customers must be shown how to make *their* electric equipment last. And most of them need assistance in lighting. Here the lighting engineer can be helpful by showing these customers how to get maximum benefits from existing equipment. Our men are setting up maintenance schedules for many customers.

What About Blackouts?

The very mention of lighting brings to my mind "blackouts." What are we going to do about them? If we don't do something, more and more business concerns are going to cut out their window and advertising lighting when they close for the day.

You may be interested in a spot survey we had made just recently. The purpose of it was to determine the effects of "blackout" threats. In Athens, headquarters of one of our smaller divisions, there has been no great amount

of war activity, and we found no change whatsoever. But in Columbus, where Ft. Benning is near, and where "blackouts" have been practiced, it was a different story. There 75% of the business houses turn out their lights upon leaving. 75% compared to none before! Of five divisions checked, a little over 8% normally turned out lights when leaving, before "blackouts" were practiced. Now 39% turn them out!

Customer Contact

I said recently, and I wish now to repeat; if your monthly bill for service is the only contact your company has with its customers, you'd better get some good jokes printed on one side of it. For bills are mighty poor excuses for building good-will.

Properly instructed field personnel do a great deal more good than we sometimes give them credit for doing. Even a bill-collector, if his manner is right, is a better contact than none at all.

"Patch and Preserve"

Now, as to the appliance repair business. There are some who advocate pushing the repair business off on dealers. I realize the reasons for this. But I wonder too if those advocates fully realize what they may be doing by this action. I wonder if they realize that they are getting rid of a very valuable means of personal contact. A worthwhile personal contact. One that renders the customers a valuable service, and makes of him your friend.

We know too that repair and service departments are sometimes costly. But they are worth the price. They are more than worth the price, especially if properly and economically operated. Why, if the auto industry can make the repair business self sustaining, and if the electric dealer can use its volume to help him in his business, shouldn't the utility company too be willing to take the lead, and set the pace, in a "Patch and Preserve" activity that is of interest and help to every customer it has?

We are in an era of *"patch and preserve."* Customers are going to look to us to help them patch-up appliances. They are going to look to us for ways of preserving appliances. In my opinion, we should not only WANT to do these things, but we should consider it our obligation to do them.

Since we are really talking about people, let's look at them in another light. The public is a marching parade. We must never lose sight of that. Even in war-time babies are born and old folks die. Boys and girls grow up to become the householders and citizens of tomorrow. New people move into our territories. By all odds, the public is a marching, surging parade—always on the move. Are we going to move with it, or let it pass us by?

If not, we must keep reminding, keep telling the public through personal contact and the printed and spoken word about ourselves and our services. We must keep telling people about the advantages of appliances—keep telling them how to keep their appliances working—even if we have none to sell. They'll be able to get them someday . . . and they will get them if the desire is there.

Advertising

Have you ever stopped to take it easy, only to find *that people think you have quit?* If so, you have learned that people quickly forget what you have done, and are only interested in what you can and will do now!

Advertising has always been the most economical means of reaching the masses with messages. Too often, in times like these, advertising gets banged on the head. This is no time for that.

We must keep customers informed about changes in policies that affect them. Failure to do so is one of the most dangerous things we can do. It is far harder to explain yourself *out of a predicament* than it is to *prevent* it. Advertising can help do this job. But it should be followed up, just as all other advertising, by personal contact.

Advertising can be used effectively to tell the public of the types of service available under customer service programs. Don't keep it a secret!

When you share confidence you gain confidence. When trouble arises, put your cards on the table. We have gone through two power curtailments down South. It seems that some utilities are scheduled to have power curtailments of one kind or another before long.

In our case, the first power curtailment was on a voluntary basis. It is very unlikely that any more will be on that basis, so there is no use discussing that one. The second one was voluntary up to a certain point, but we did have OPM orders that time and it was a matter of carrying them out.

Voluntary or compulsory, power curtailments are tough babies to handle. Fortunately, we came through the two of them with little, if any public antagonism. We put our cards on the table. We told the public in simple, frank messages what it was all about, what was necessary, the necessity of unified action.

I have emphasized over and over again the importance of personal contact. The two power curtailments brought home to us in no uncertain terms the vast necessity of it. We devoted our entire sales department personnel to helping out. Industrial power engineers, home service girls, rural lines engineers, lighting engineers, salesmen—they all pitched in.

We had the job of enforcing the OPM orders. Our merchandise salesmen policed their territories at night, reporting violations and following them up to familiarize the violator with the restrictions and the necessity of strict compliance. Lighting engineers supplemented them. Home Service girls helped contact the residential customer and show her how to get along with minimum amounts of current. Industrial power engineers did a magnificent job of satisfying large customers, many of whom suffered one-third reductions in power consumption.

It's just human nature to want to do somebody a favor. We asked the public to do us a favor and it responded. You can well imagine the ridicule and condemnation we might have experienced for not having the facilities, for not being prepared, for not doing this or that, regardless of whether we were at fault—IF the public had not been our friends; IF the public had not been fully informed; IF we had not put our cards on the table!

I mentioned the power curtailments for two reasons. First, to let you know that you *can* go through them and come out still friends with your customers. Second, to illustrate the importance of having a good supply of good-will.

Remember what I said earlier—there is a marked difference between the *Unwillingness* to serve and the *absolute inability* to serve. Advertising can help explain the difference. There is something about seeing things in print that makes one believe them. Advertising is need to back-up personal contact, just as personal contact is needed to back-up advertising. One without the other is a weak sister! So, I say—keep up your advertising to keep up good-will. And make sure by keeping personal contact with your customers.

Sauce for the Goose

You are all familiar with the old saying, "What's sauce for the goose is sauce for the gander." If you get nothing more out of what I've had to say, I hope you will remember this.

Today, when it is so easy to do so, we cannot afford to let that adage be our philosophy. We cannot afford to tell our customers, "What's sauce for the goose is sauce for the gander," and let it go at that. We cannot say to our customers that whatever hardships the by-problems of war . . . higher taxes . . . no merchandise . . . and all the others . . . placed upon us are likewise placed upon them. It would be an easy way out. But it would be a dangerous way out.

We must take the attitude that, "What's sauce for the goose is NOT sauce for the gander."

We must strain every muscle in our strong organization to serve the public. We must take some chances. We must run some risks. Above all, we must pursue a *program of action*—to prevent an attitude of a complacency or defeatism.

Summing up what I've said, these things will help maintain your net revenues and good-will during the war:

1. Hold the load you have as long as you can.
2. Prevent complacency within the company.
3. Explain the difference between unwillingness and inability to serve.
4. Preach and teach proper use and care of equipment.
5. Help industrial customers convert to war work.
6. Contact customers as often as possible.
7. Remember the public is a marching parade.
8. Keep the public aware of services and facilities.
9. Keep customers sold on services, through helping them to make those services more helpful to them.
10. When trouble comes, put your cards on the table and tell the facts.
11. Devise and follow a well-laid consistent plan that will make these things a real part of your business, not just a casual job for somebody to do.
12. Don't back-slide.

The Role of Electrical Manufacturers in the War Effort

(*Continued from page* 222)

bilities making up the scene of the electrical industry at war, I would like to leave just this with You:

Yesterday men and women of our flesh and blood built a nation, and as part of that greater job, built an industry. They gave it their hopes, their talents, and their strength. Today we must give it no less. Because of the nature of that industry, we have seen it weave itself into the fabric of growth, so that today it touches every man who lives and works. In the punctuation of electrical progress, there may be commas, there have been exclamation points, there will always be—for a time—question marks, but there is no period. That emblem of finality cannot exist for the electric light and power industry or its partner in progress, the electrical manufacturing industry.

Its trials and tribulations within the American scene are as nothing compared to the terrible danger that confronts its from without—now, today, in this very hour. The real stake is America and its way of life—not our puny part as individuals or companies.

Therefore, as a final word I cannot refrain from pleading that we tear into the grim job in hand, slashing, fighting, working, with selfless devotion; that we spend ourselves in toil and sweat—yes, blood and tears—letting these lines remind us of the utter urgency:

Time that is past thou never canst recall;
Of time to come thou art not sure at all;
The present only is within thy power,
And, therefore, now, improve the present hour.

Cold-blooded, hard-boiled realism you say—I agree. So lacking in spiritual values, they clash with all our best instincts. Yet this is war.

But let me come back to a more hopeful note, a simple formula, embracing some promise for the future, yet emphasizing our present goal—

A task without a vision is drudgery
A vision without a task is a dream
A task with a vision is *Victory*.

Henry A. Lemmon

HENRY A. LEMMON, president of the Sierra Pacific Power Company (Nev.) died at his home in Reno on May 28 following a heart attack. Mr. Lemmon was 69, and had been in ill health for several months.

Born in Sierra Valley, Calif., Mr. Lemmon began his career as a newspaper editor and publisher and entered the power business in 1906 as Nevada representative for the late Frank G. Baum, hydro-electric engineer.

In 1907 he was employed by the Nevada-California Electric Power Company, as agent and later he became associated with the Reno Power, Light and Water Co., a predecessor of Sierra Pacific Power.

When the United States entered the first world war in 1917, he left the power company to do war work. He served as food administrator for Nevada and directing head of the Nevada council of defense.

In 1919 Stone and Webster sent him to Halifax, Nova Scotia, as sales manager for the power company there, and a year later he became personnel manager for all Stone and Webster utilities, a post which he held until ill health forced him to resign it in 1931.

He returned to Sierra Pacific Power Company as sales manager and while in that capacity developed the merchandising plan whereby the utility does no direct selling but cooperates with local dealers in placing merchandise.

He later became vice-president of the company and in 1941 was named president to succeed the late George A. Campbell.

1942 RATE BOOK

The 1942 edition of the Rate Book, published by the Edison Electric Institute, will be available on July 1st. This edition reports rates effective through March, 1942.

The 1942 Rate Book includes residential, commercial and power rates effective in 4,204 cities, towns and communities of the United States and Canada having an aggregate population of 67,911,351. Rates for municipal plants are not included.

The subscription price is $10.00 to members. (Non-member price is $25.00). If your order for the Rate Book has not already been placed, it is suggested that this be done promptly in order that you may receive a copy of the book immediately upon publication.

EDISON ELECTRIC INSTITUTE
420 Lexington Avenue, New York, N. Y.

JUNE 1940

JUNE

Utility Leaders Analyze Problems Confronting the Power Industry

Companies Ready to Meet Any Defense Program Needs

C. W. Kellogg Addresses Annual Edison Electric Institute Convention

Expansion Question Discussed

Special to THE WALL STREET JOURNAL

ATLANTIC CITY—Representatives of the electric power and light industry from every section of the country, meeting in convention here, yesterday heard utility executives discuss current problems [illegible] ness because of the network of interconnection between power plants and system and the diversity of demand upon them.

The speaker forecast the addition this year of 1,640,000 kilowatts of generating capacity by the utility industry, with a further 1,350,000 kilowatts already planned for completion in 1941. "Still more can be provided," Mr. Kellogg said, "if conditions require to keep ahead of the normal rate of growth and maintain the margin." A large part of the new capacity, according to Mr. Kellogg, is to be in steam plants located in the industrial areas. In [illegible] 1940 the Federal government has [illegible] pacity in central stations can be added just as quickly as new factory facilities can be built; (4) there is already a large degree of interconnection of power systems in the industrial areas, and such other interconnection as may prove practicable and useful can be made in a relatively short time."

Vennard on Rates

The downward trend of electric rates of the past seven years must be changed if the electric power and light industry is to maintain its present financial position in the opinion of Edwin Vennard, vice president of the Middle West Service Co.

Mr. Vennard warned that the industry has gone too fast and too far in reducing rates during a period [illegible] have do-

UTILITIES GEARED TO AID DEFENSE

Kellogg Says Power Supply Is Adequate Without Need for Special Expenditures

BY THOMAS P. SWIFT
Special to THE NEW YORK TIMES.

ATLANTIC CITY, June 6—The Federal Government can count upon the availability of an adequate power supply for national defense without the need for expenditures or other special measures on its own account, Charles W. Kellogg, president of the Edison Electric Institute, declared today in the keynote address at the eighth annual convention of the institute here.

Speaking to approximately 2,000 leaders of the electric light and power industry, gathered from all parts of the country for the four-day convention, Mr. Kellogg [illegible] "True, we have taken on much greater responsibilities in supplying power to industry since that time, but the amount of generating capacity in isolated industrial power plants has remained about the same as in 1917. In the meantime, while we have gained 280 per cent in capacity and 300 per cent in output, the corresponding gain in population has been only 36 per cent; and the gain in industrial production, as measured by the output of all kinds of factories, is about 15 per cent.

"If factories with war orders go to two or three shifts, as is contemplated in the government's industrial mobilization plan, this greater output of electric energy per kilowatt of existing capacity will increase still further.

"The extent of this regional interconnection is indicated by the fact that the mileage of transmission lines in industrial areas has increased tenfold since 1917. Additional interconnecting links can be added in a relatively short time, since such links would probably be short and the manufacture [illegible]

UTILITY AID PLEDGED TO ARMS PROGRAM

Kellogg Pleads for Minimum of Additional Regulation at E. E. I. Meeting

(Special to Journal of Commerce)

ATLANTIC CITY, N. J., June 6.—A plea that the utility industry be left free to conduct operations with a minimum of additional regulation during a national emergency and a pledge of willingness to accept the grave responsibilities which such an emergency would place on the industry was made here this morning by Charles W. Kellogg, president of the Edison Electric Institute.

Mr. Kellogg's address opened the eighth annual convention of utility executives from all over the country under auspices of the institute. The round of speakers who followed the president today, and others scheduled for tomorrow and Thursday, the last day of the convention, consists of prominent officials and authorities taking up various phases of the problems confronting the industry.

Charles E. Wilson, president of General Electric Co., also addressed the assembly today, offering a "Practical Solution" to the problem of economic ills and our future role in world reconstruction. Mr. Wilson held that business leaders in this country could contribute most to the [illegible] of the [illegible] while working along with Government and labor.

"The formalities of registration and special committee meetings were for the most part completed yesterday, and the first general session was convened this morning in the huge City auditorium which will be the headquarters of the convention. The president's speech was preceded by [illegible] report of the treas-

Output and Sale Of Power Sets New High Mark

Largest Gains Reported in Industry, as Leaders Gather for Edison Parley

Special to the Herald Tribune

ATLANTIC CITY, June 3.—Production and sale of electric power in the United States set all-time high records during the twelve months just ended.

This was announced tonight by spokesmen, as 1,200 utility representatives gathered for the eighth annual convention of the Edison Electric Institute. Sessions open tomorrow for three days in the city auditorium.

The summaries showed that 12 per cent more current was generated than in the preceding year. Domes- [illegible] have risen to [illegible]

Utilities Ready To Aid Defense

Facilities Ample, Kellogg Holds At Edison Session

Special to the World-Telegram.

ATLANTIC CITY, June 4.—The United States electric light and power industry is equipped to do its job in the strengthening of the means of national defense, C. W. Kellogg, president of the Edison Electric Institute, declared here today as the institute's annual meeting got under way in the Convention Auditorium.

"Never in history," the speaker said, "has any country been so well equipped with power for the production of munitions as is our country today.

"At the end of 1939 installed generating capacity in the United States exceeded the sum of the non-coincidental peak demands on our power stations by over 45 per cent. In the industrial areas [illegible] the margin

Sums Up Situation.

Summarizing, Mr. Kellogg said:

(1) There is adequate electric power to supply the requirements of existing industrial establishments;

(2) War activity will lengthen the hours of use in existing factories, thus increasing load factors without corresponding increase in peak demand;

(3) Additional generating capacity in central stations can be added just as quickly as new factory facilities can be built;

(4) There is already a large degree of interconnection of power systems in the industrial areas, and such other interconnection as may prove practicable and useful can be made in a relatively short time.

General Electric Chief a Speaker.

In another address C. E. Wilson, president of the General Electric Co., declared "that we can make our greatest contribution to our own security and to the ultimate peace and harmony of the world by greater production and [illegible]

Power System Held Ample for Any War Need

Utilities Much More Ready Than in 1st World War Edison Session Is Told

Special to the Herald Tribune.

ATLANTIC CITY, June 4.—The nation's electric power production and distribution system is ample for any wartime emergency, 2,000 utility representatives heard today at the eighth annual Edison Electric Institute convention.

Charles W. Kellogg, of New York, president of the institute, disposed of that question with figures showing the utilities' preparedness is almost incomparably greater now than in the first World War. Other speakers then swung into the convention's technical problems, arguing that:

"The power industry now has three and a third times as much generating capacity, and an annual output of electricity four times as great, as when we entered the first World War. We have gained 230 per cent in capacity and 300 per cent in output, while population gained 29 per cent and industrial production from all kinds of factories gained 15 per cent. An additional war load is nothing like the factor it was twenty-five years ago; the present war in Europe has failed to tax the power resources of Great Britain."

Mr. Kellogg emphasized, however, that the utility industry can serve best "if left free to use its own judgment and initiative and responsibility.

Personnel Held Real Defense

"We have long experience in ren-

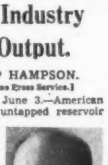
ELECTRIC POWER SUPPLY AMPL

SURVEY OF COUNTRY DISCLOSE

Big Reserve Ready to Help Industry Boost Output.

BY PHILIP HAMPSON.
[Chicago Tribune Press Service.]

Buffalo, N. Y., June 3.—American industry has an untapped reservoir of electric power sufficient to increase its production by nearly 20 per cent, C. W. Kellogg, president of the Edison Electric Institute and chief of the power division, Office of Production Management, said today at the ninth annual convention of the organization.



C. W. Kellogg.

To put this unused power to work, he explained, industry will have to work 24 hours a day seven days a week—an exacting schedule which the electric industry follows. During a [illegible] of the [illegible] the

POWER FACILITI FOR D

However, Utilities Must Priorities on Equipme Kellogg Warns

(Special to Journal of Com

BUFFALO, June 3.—Charl Kellogg, president of the Electric Institute, declared today that the power produc pacity of the country was also to meet the heavy requirem the defense program but w that electric light and powe panies must obtain priorities equipment if the expansio of the industry are not to b structed.

Speaking before the ninth convention of the institute the head of the largest aggre of utility leaders and engine the United States and C

POWER RESOURCES CALLED ADEQUATE

Edison Institute Head Sees No Defense Shortage.

Buffalo, June 3 (A. P.).—With the nation's electric power industry expanding to meet the challenges of defense production, an allegation of power shortage is unwarranted, C. W. Kellogg, president of the Edison Electric Institute, declared today.

Addressing the institute's ninth annual convention, he told the utility executives and electrical manufacturers that the power sit- [illegible]

He asserted "we have the satisfaction of knowing that we have built up in this country the greatest development of electricity the world has ever seen; and of realizing that, through the facilities and organized man power we have thus assembled, this continent should be better able to defend itself than any area of the globe."

Tom P. Walker, president of the Gulf States Utilities Company, Beaumont, Tex., told the institute "the utility industry has no chance whatever of winning a price cutting war with the Government of the United [illegible]

Defense Found Past Schedule In Construction

Edison Session Hears U. S. Will Be on Mass Production Basis by Midsummer

By J. Leonard Matt
A Staff Correspondent

BUFFALO, June 3.—Leaders of the electric power industry received today encouraging reports on the progress of America's all-out defense program from representatives of both the Office of Production Management and the National Association of Manufacturers who addressed the second day's session of the Edison Electric Institute convention at the Hotel Statler here.

Charles W. Kellogg, president of the Institute, who is serving as chief of power with the O. P. M., asserted that the "construction program is well ahead of schedule and, by midsummer, we, as a nation, shall be on a mass production basis on all of the materials needed for our own protection and for aid to Great Britain."

William P. Witherow, chairman of the defense committee of the N. A. M., declared that [illegible] of the chemical and electrometallurgical industries, Mr. Kellogg said the privately owned and government utilities would add a total of more than 7,500,000 kilowatts to the generating capacities in 1941 and 1942, with an additional 870,000 to be installed by factories which supply their own power. These totals exceed by 50 per cent any past annual growth in demand and are [illegible] times as great as the annual demand growth during the first World War, he explained.

CLOSER TIES SEEN [illegible] WER

Utility Men Stress Point of Co-operation—Weigh Plan to Expand Federal Unit

(Special to Journal of Commerce)

BUFFALO, June 3.—Closer co-ordination of the private electric light and power industry and [illegible]

th Record

1941

JUNE 1942

Sufficient Electric Power Available for War Industry Output, Says Utilities Spokesman

Kellogg's Assurance Based on Analysis of Two-Year Demand—Some Civilian Curbs

The private electric power and light industry gave assurances yesterday that there would be no shortages of electric power for the production of war materials.

An industry spokesman, C. W. Kellogg, president of the Edison Electric Institute, gave these assurances in an address before the annual meeting of the Institute here.

Mr. Kellogg's confidence that the nation's power supply would be more than adequate to insure an uninterrupted flow of power to the war machine was based on an analysis of war industry's demands during the past two years; [illegible]

"The average utility, however, with relatively stable earnings and with five-eighths or more of its costs consisting of charges on fixed investment, finds itself unable to pay dividends on the large part of that investment represented by stock, by a so-called 'excess profits,' which are not such because they are computed without deduction of the normal and surtaxes."

Pooling Program Urged

Stressing the vast importance of electrical companies pooling reserves through interconnection of neighboring power systems and private industrial and commercial power producing plants, Horace P. Liversidge, president of th[illegible] urged

WPB Official Lauds Industry

W. H. Harrison, Director of the Production Division, War Production Board, paid tribute to the industry for keeping pace with demands of war.

In no instance that he could recall, said Mr. Harrison, has production been delayed because of lack of power.

He envisaged the time, however, when manufacture of new generating capacity would be practically at a standstill, which might mean in specific instances a curtailment in the supply of power for retail commercial and civilian use.

That is because the country is rapidly ap-

Utility Preparedness Cited As Basis for War Services

Liversidge Points to Normal Conservative Operating Practices—Power Shortage for 1943 Is Indicated

The noteworthy preparedness in which privately managed utilities found themselves at the outbreak of the war is the primary reason for its current ability to meet the tremendous demands for power made by all industry, H. P. Liversidge, president of the Philadelphia Electric Co., declared yesterday at the institute's morning session.

This gratifying stage of preparedness, Mr. Liversidge stated, was due to two main factors:

"In the first place we, as an industry, had learned early to look ahead. With the development in size of our services and the growing dependence of huge populations upon us for comfort, con[illegible] and safety over the[illegible] set for ourselves

rapid shifts in Army and Navy plans may force a shortage of electric power for the industry during 1943, with the consequent need of local rationing of power in some cases.

The plan for power expansion by the electric utilities contemplated for 1942 and beyond is indicated by tremendous additional generating capacity, on order, or in process of construction. It can be conservatively stated that for 1942 alone this amounts to more than 3,300,000 kilowatts; for 1943, 2,600,000 kilowatts and, for 1944, almost 2,900,000 more.

"But difficulties in obtaining essential materials have become increasingly great [illegible] priorities

Power for All War Needs Assured, Conference Here Is Informed

Rationing for Civilian Use in Some Highly Industrialized Areas Is Possibility, However — Bottleneck Avoided

Spokesmen for both the Federal Government and the private power and light industry gave assurances yesterday that the nation has an ample supply of electricity to meet war production demands. Power rationing for civilian use in certain highly industrialized areas, however, probably will be necessary as war output accelerates, it was said.

Speaking at the annual power conference of the Edison Electric Institute in the Hotel Biltmore, William H. Harrison, director of the production [illegible] of the

As to the operating position of the industry, Mr. Kellogg reported that at present installed generating capacity serving the public totals 45,000,000 kilowatts—or more than the combined facilities of the Axis powers. This represents a gain of about 4,350,000 kilowatts of capacity since June, 1940, he added, and an additional 7,000,000 kilowatts is in various stages of manufacture for intended delivery between now and 1944.

H. P. Liversidge, president of the Philadelphia Electric Company, called upon the Federal Government to waive its regulatory requirements for the duration with respect to those utilities entering into interconnecting or pooling agreements [illegible] ities en[illegible]

SEES AMPLE POWER FOR WAR ACTIVITIES

New York, June 13.—The private electric power and light industry have given assurances that there will be no shortages of electric power for the production of war materials.

The industry's spokesman, C. W. Kellogg, president of the Edison Electric Institute, gave these assurances in an address before the annual meeting of the Institute here.

Mr. Kell[illegible]fidence [illegible]

able greater requirements, and the experience of the industry in meeting all demands over the past several years.

He indicated, however, that some curtailment in civilian consumption might be required later on in certain areas because of the stoppage of fabrication—by Government order—of a number of electric generators ordered for delivery later this year and next year. Stoppage of such work was required to permit diversion of critical materials to other more pressing war needs.

William H. Harrison, director of the production division of the War Production Board, asserted that "the record is clear as to this—power is meeting war demands.

"Clear cut evidence of this is to be found in the fact that in no instance, that I can recall, has production been delayed because of lack of power. . . . This is to the credit of the industry for its ingenuity and effective integration of facilities in meeting the current situations, and for its visions, forward looking planning and sound engineering and operation over the years past."

Ample Power Supplies Seen For War Need

Non-Essential Uses May Be Rationed in Some Areas, Institute Head Declares

The American people were assured yesterday that just as war production has not yet been delayed for lack of electric power, the acceleration of the arms program will not be braked by a shortage of kilowatts. At the same time, however, spokesmen for the $15,000,000,000 privately owned utility industry admitted that there will probably be certain localities which will be forced to ration non-essential power used at certain hours next year.

The annual business meeting of the Edison Electric Institute at the Hotel Biltmore, shortened this year to a two-day session in view of the preoccupation of its members with the task of supplying more electricity than ever before, was the scene of this praise and prediction.

War Demand Seen Met

"On the other hand," asserted Mr. Liversidge, "I doubt if there will be any area in the country that will not be able to supply the local war load through some curtailment of spreading non-essential use of power."

Rise in Capacity Cited

Pointing to the increase of 4,350,000 kilowatts in the central station generating capacity of the industry since June, 1940, and the 7,000,000 additional kilowatts scheduled for delivery by the end of 1944, Mr. Kellogg went on to say that the experience of the industry to date leads to the belief that the war industrial effort will be buttressed by an adequate power supply. Compared with a margin of 11,350,000 kilowatts of generating capacity in 1940, the industry now has a reserve of about 10,800,000, despite a rise in war expenditures from about 2.5 per cent of national income to 45 per cent at present.

"It is a source of deep satisfaction to the utilities that so far drafts on surplus capacity have been as small as they have been and that no power shortage has arisen from lack of

ALL POWER NEEDS HELD FILLED IN WAR

More Service Problems Are Expected, Harrison and Kellogg Tell E. E. I.

Declaring that "power and war production are synonymous," W. H. Harrison, director of the production division of the War Production Board, yesterday said at the[illegible] Electric Institute at the Hotel Biltmore that there is no instance in which production has been delayed because of lack of power.

Mr. Harrison emphasized that the electric power industry is making an effective contribution to the war effort and that it has a "prominent place in the war lineup." He added that while there have been instances in which there has been some tightness in meeting de-

Power Adequate, Kellogg Says

BUFFALO, June 3.—The national defense construction program is well ahead of schedule and by midsummer the country shall be on a mass production basis on all of the materials needed for its protection and for its aid to Great Britain.

This was the report given today to more than 1,000 delegates to the Edison Electric Institute convention by C. W. Kellogg, president, now on leave serving with the Defense Commission and Office of Production Management.

Mr. Kellogg expressed confidence there would be an adequate supply of electric power "not only to turn the wheels of industry, but also to supply the needs of the great electro-chemical and electro-metallurgical industries."

He cited the present seven and one-half million kilowatt construction program, the present vast generating plant and its reserves coupled with great flexibility for extra output as factors to dispel all claims of a power shortage.

"As to the nature of some alleged power shortages that have been reported, Mr. Kellogg said, "the matter of price looms large. Some claims of power shortages when analyzed have proved to be merely an unwillingness to pay the rate necessary to purch[illegible]

COST OF ARMS PUT AT $100,000,000,000

W. L. Batt of OPM Says 25% of Income Will Be Needed for Output for War

SPEAKS TO UTILITY GROUP

Industry Told to Ignore the Problem of Surplus Capacity After the Conflict

By THOMAS P. SWIFT
Special to The New York Times.

BUFFALO, N. Y., June 4—The United States will have to spend at least $100,000,000,000 to match the German war machine and the people of this country will have to give 25 per cent of the national income into defense production for a successful consummation of the war effort, W. L. Batt, deputy director of the Office of Production Management, declared here today.

Speaking before the annual convention of the Edison Electric Institute, Mr. Batt called upon industry in general to step up production to unprecedented levels and to ignore the post-war problem of surplus capacity.

"The requirements of defense clearly call for this tremendous production capacity, and defense comes first," Mr. Batt declared. "We have to have that capacity, and we will have to get together when the emergency is over to lick that problem."

Business in England

England, Mr. Batt said, made the mistake in the first nine months of the war of trying to do "business as usual," and "we don't want to make that same mistake." Civilian necessity, recreation and comfort, he declared, will have to be considered, secondary to the defense

Y AMPL
SCLOSE
ACILITI
FOR DE
E HELD ADEQUATE
NEEDS
WER PROJECTS
TIES SEE
ADEQUAT
chedul
n

Appliance Problems of Today and Tomorrow

By B. W. Clark

Vice-President, Westinghouse Electric and Manufacturing Company, Pittsburgh, Pa.

An address before the Annual Meeting of the Edison Electric Institute, New York, N. Y., June 11, 1942

A LITTLE over a year ago I spoke to the Commercial Section of EEI on the subject of household load prospects, and of the changing situation in the Appliance manufacturing business, brought on by the needs of National Defense and the requirements of those Nations who are now our Allies.

We manufacturers were even then busy designing substitutes for critical materials in an effort to keep out of the way of the war program, and still keep our business moving, our ultimate users satisfied, our dealers and distributors in business, and to provide for continued expansion of utility home service.

After the time I talked last spring, the scramble became intensified by threats of curtailment, the need to obtain defense business to keep our plants open and our people employed; and the need to make plans for carrying on through the emergency.

With the war actually upon us came a quick impetus to curtailment until, as of May 30, appliance manufacture is actually stopped and our effort has been almost entirely turned to the war.

This, no man will deny, is as it should be. If we lose the war, we lose all—everything that has made us the world's freest, happiest and most prosperous Nation. Nothing must be left undone, by anyone, that will speed the victory—preserve the freedoms that mean everything to us. While we chafe under our present restrictions, regimentation, beaurocratic regulations, mounting taxes, rationing—we can still thank God for a comparative freedom to do and say what we like infinitely greater than enjoyed by almost all of the rest of the world. It's worth fighting for.

We can make no calm assumption of victory—but there is today a grim determination, a vast step-up of production, a gradual unfolding of plans, that give confidence that we will not only win this war, but will, with our allies, organize to keep the peace and to rebuild the world structure.

I did not come here to talk about the war—I came to talk about our civilian responsibilities of today and our planning for the new tomorrow.

MR. CLARK

It seems proper to paraphrase the old slogan and to say "In time of war, prepare for Peace." That is what I want to discuss, as it applies to the electric appliance industry and the domestic side of the utility industry.

It is not difficult to visualize the awful chaos which can follow this war. What can happen when the vast war production machine suddenly stops turning 60 per cent of the National income into destructive implements—when the boys come home clamoring for jobs, when the tremendous cause which has crystallized our National unity shall be won.

I am one who believes that the things we can imagine must not and will not happen—this old world would not stand it.

I am *not* one who believes we can make a blueprint now for the reconstruction or for life under the peace. But I do believe that we can act now in favor of an orderly return and can well think what part these industries can play in the future—as important to our life and freedom as is our war effort today. So I can talk business today without the slightest feeling that such talk is trivial. Even though I deal with a small segment—the principal holds.

The manufacture of electric appliances is finished for the duration and further—until plants can be put back in shape to produce them—a tremendous job in itself.

There are in manufacturers and distributors hands, 575,000 electric refrigerators, frozen and under Government control. A June 15th order is expected to provide rationing of these boxes by WPB for various Government agencies. This amount on hand is about 25 per cent of one year's recent production.

Approximately 65,000 ranges are in these stocks—frozen, with no plan as to how they will be released.

Of other appliances there are virtually none in the hands of manufacturers, and there is no accurate estimate of other stocks, but it seems fair to presume that there are enough small appliances in the hands of distributors, dealers and utility companies to supply reasonable demands during the balance of 1942.

Thus, barring the tag end of the small appliance business, we are all facing the fact that we're out of business insofar as electric appliances are concerned.

And yet, we face a tremendous responsibility, or a series of them.

According to the best estimates, the following Electric Home Appliances are now in use in the United States:

20,000,000	Electric	Refrigerators
3,500,000	"	Ranges
19,000,000	"	Washers and Ironers
16,000,000	"	Vacuum Cleaners
1,000,000	"	Water Heaters
16,000,000	"	Toasters
15,000,000	"	Fans
36,000,000	"	Radios
90,000,000	"	Misc. & Small Appliances
216,500,000	Total Electric Appliances	

This is a pretty figure of a business that was, but is not. This is a measure of a responsibility laid upon the whole Electrical Industry if we manufacturers, distributors and dealers expect to do business again and if the utilities would preserve their present revenue and would garner the future home load which they *must* have.

To service these appliances, the man-

ufacturers have built up large stocks of repair parts—estimated to care for the demand for a period of two years. We hope it will last, because to set up to make more, with the condition that our plants are in now, is practically an impossibility.

In order to promote the "Keep 'em rolling" idea really important campaigns have been carried on by mail and in the trade press directed to the dealer trade. These campaigns point out, specifically, the opportunities dealers have for the expansion of service business, the methods of publicizing this service, and give simplified and detailed instructions in the handling of all the usual troubles.

Furthermore, manufacturers have organized service schools throughout the country in which the case for better service and the opportunities to earn profit and to gain good will and prospects for the coming selling period are stressed. In these schools the right methods of handling complaints and service calls are dramatized against the all-too-prevalent slovenly methods and the practices of the "gyp." Also, dealers and their service men get actual instructions in performing their work.

Home Economics departments are busy. They have turned to doing their work by home nutrition programs for the benefit of workers, and are ready to give lectures on electric cookery, nutrition values and so forth.

Since there is no product to sell, National advertising has taken to promoting careful use and to recommendations for having dealers service men look after any trouble in its incipient stages. "Care and Use" booklets have been printed and broadly distributed to users through servicing dealers and through Utility Companies. These booklets give condensed and helpful advice to the home owner regarding the most effective ways to use their appliances and the little things that can be done at home to conserve their life and efficiency.

My Company has more than two million of these books in process of distribution. All are delivered by hand by dealers and utility salesmen, giving a fine opportunity for friendly contact and for personal suggestions.

Without a dollar's worth of goods to sell, the appliance manufacturers are, I am sure, making a large investment in protection of their appliances already in the field, and in keeping the desirability of "Electric living" to the front of peoples minds.

It might be expected that, with nothing to sell, the manufacturers sales organization would have been disbanded. This is not the case and I believe will not be the case.

Sales forces have been considerably lightened, it is true, but in all cases I know of a strong nucleus has been retained, directly devoted to the appliance business and capable of rapid expansion almost at a moment's notice, because the men have gone to the armed services or have been transferred to war work, either with their own companies or in government agencies.

Field service departments of the manufacturers are busier than ever before.

These men (Sales and Service) are devoted to these jobs:

Keep our appliances at work.
Training dealers in the giving of service.
Maintaining friendly contact with the trade.
Promoting the Electrical-living idea and the best methods of use, with consumer groups, through the use of educational films.

In short, in addition to doing our best to protect our product against orphanage, we are making a sincere effort towards the building of the future demand, which we expect to be tremendous.

This work is ably supported by the wholesale distributors, most of whom have broadened their base of operations by means of outside lines and can be expected to hang on through the emergency. They too have retained service departments and the sound nucleus of a sales force, which can be expanded rapidly.

The dealer situation is not so clear, and it is something for both of us to worry about. I have sketched the efforts which manufacturers are making to encourage and support the building of service business as a means of holding on and building for the future.

But service business, in most cases, is still too thin to be the sole support of a dealer—service men are mostly young and subject to the draft.

Especially among the exclusive electrical dealers and appliance specialists, we will witness a high mortality, with a consequent decline in user service just when the need is greatest. Further than this, the corollary is a slackening interest in the use of our appliances and a back-sliding to other methods of doing the various jobs. This will be costly to overcome in the future.

Many dealers with broader lines of merchandise will live through, build their service business, promote in favor of the future. They present a bulwark of strength. We should all put forth whatever effort it takes to keep these factors aggressively in business, giving all possible support and encouragement to their operations.

All of this sums up to perhaps the most important problems in customer relations that the utility has to face—protection of existing load and preparation for future load building.

I have dwelt upon the methods by which manufacturers are going about it to protect their product and their future, and I think they are doing everything humanly possible. But they are not in or of the local community. The utility *is* and has a stake, so much greater than any local dealer that its efforts to hold present load and to build good will cannot be too well thought out or too well executed.

According to compilations of the EEI, 25 billion, 124 million kwhr were sold to residential consumers in 1941. Of these, 2/3, or 17 billion, 200 million were sold through the operation of appliances.

The home provided 18½ per cent of total load. In 1940 residential load was 20 per cent of the total.

C. A. Collier, Vice President of Georgia Power Company, spoke before the Southeastern Electric Exchange in April of this year. It is the kind of address I wish I could read to you complete. Since I can't do that, I can quote excerpts that will give an idea of his thinking, which I believe is about the soundest I have seen on paper. I hope he forgives this use of his fine talk.

Here are some high lights I have gleaned:

"We have found, and I am sure that you have found, that our most satisfied customers are the ones who make the fullest use of our service. And that our least satisfied customers are the ones who make the smallest use of our service. The reasons are obvious. Our rates are so constructed that the more electricity a customer uses, the less it costs him per unit. We call them inducement rates. And they were so named because they induce customers to use more electricity. They might just as easily be called good relations rates, for they build better relations, too.

"Full utilization of our service and customer good-will are so entwined that they are almost inseparable. Just how much the full utilization of our service has to do with good customer relations is absolutely startling when you stop to think about it.

No Appliances—No Load-Building

"Load-building programs are out for the duration, out for many well-known reasons. So, the best thing we can do—and the thing we MUST do—is to *protect the loads now on the lines.*

"There is no cut-and-dried formula for doing that. It is going to take ingenuity and imagination, common sense and hard

work to do it. But it can be done. That is the number one thing for every electric company to do as the first step toward maintaining good will during the war emergency. *Hold the load you now have!* And keep it balanced insofar as you can. Residential, Commercial and Industrial.

"We must keep customers from back-sliding. It's an easy matter for appliances with minor things wrong with them to be put aside and substitutes used—brooms instead of vacuum cleaners; coffee pots instead of percolators; flap-jacks instead of waffles. Bulb-snatching and the use of wrong-sized bulbs are easy habits to form.

"If we cannot replace old appliances with new ones, we can certainly see to it that the old ones are made to last as long as possible. And there is good reason for continuing to tell our customers the advantages of better light-better sight. In fact, there is more reason than ever to do this—for our eyes are in greater demand, they are more valuable, in this time of war.

Customer Contact

"If your monthly bill is the only contact your company has with its customers, you'd better print some good jokes on one side of it, for bills are mighty poor excuses for building good will.

"Customer contact is vital to good-will. And there is no substitute for personal contact. No matter how interested you are in your customers and their problems, unless you let those customers *know about your interest,* how else can they know?

"Properly instructed field personnel do a great deal more good than we sometimes give them credit for. Their personal contact means much to the company in terms of good-will. Even a bill collector, if his manner is right, is a better contact than none at all.

Service

"Have you ever been completely satisfied with the service or repairs rendered on your automobile? On your radio? Your watch? Service and Repair departments, in many businesses, have been the "ugly ducklings." In many cases they have been hardly more than rackets. Why else would a series of articles appear in the Reader's Digest entitled, "The Repairman Will Gyp You If You Don't Watch Out?"

"Because we are going to be more and more in the business of service and repairs, we need to give considerable attention to this.

"If your service and repair department is not up to snuff, take steps right now that will make it the best, most capable department you can. Poor service, sloppy repair jobs, can tear down more good-will in one minute than you can build up in one year!

"*People*—that is what our customers are—*people* remember companies by *tangible things.* You judge the Buick Company, or the Chrysler Company in terms of what service your Buick or Chrysler renders. Our customers judge us *by our service.* And they judge us by the appliances they use. If the range, or clock, or fan goes on the blink, and we have done nothing to keep it from doing so, who gets the blame? We do. You can blame it on whomever you please, but the blame bounces right back in your face.

"Remember that—people judge us by tangible things."

In areas where dealers are active and efficient much can and must be done in encouragement and support of their efforts; and, where dealer situations are weak or weakening, supplementing their service work and their customer contact. I hate to see utilities drop the appliance business at this juncture, where dealers situations are not strong.

The whole job is one in which we must cooperate each in his field, in the protection of product, load, good-will and the future.

And a word about the future. Even though we cannot make a blueprint, there are some practical certainties.

When this war is over, literally millions of existing appliances will be worn out or ineffective in comparison with modern standards. A big market will be waiting both for replacement and for those needs which cannot now be met.

The load now being taken up by war industrials will taper off sharply. It must be picked up—and what is half as certain that it can best be picked up, in large part, through a vast expansion of the residential appliance market?

One tremendous part in this stake is in preservation of product reputation—customer good-will—continued promotion of the idea of "Electrical living." They are all one.

Manufacturers are working well beyond this point—necessity being the mother of invention, we have, perforce, learned much about materials and methods which we would not have learned without the war restrictions.

We are all busy with research, invention and design. We are studying with the utmost criticism the product of today, to make tomorrow's better in point of efficiency, utility and style. We are working to find new uses for electricity in the home. More money than ever before is being spent on forward-looking developments. It is our fond hope that the post-war product will provide a new impetus to the use of electricity in the home.

My thesis is that, when the victory is won, every man of us, in every line of business, must turn to pursuits which will result in a new peace time level of employment—a new standard of living. This will be not only an opportunity, but a patriotic duty.

No small part should be played by the electrical industry as a whole. Let us do our job today, that tomorrow our bit in the reconstruction may be a worthy one.

Resolution on Alex Dow

The Board of Trustees of the Edison Electric Institute, at its first meeting following the death of Alex Dow adopted the following resolution:

WHEREAS the Board of Trustees of the Edison Electric Institute heard with profound sorrow of the death on March 22, 1942, of Alex Dow, Chairman of the Board of The Detroit Edison Company and for a number of years an honored member of the Board of Trustees of the Institute, now, therefore,

BE IT RESOLVED that the Board place on record their deep appreciation of Mr. Dow's manifold contributions to the operating and managerial practices of the electric industry for more than half a century; their gratitude for his generous, sound and far-sighted contributions to the work of this Institute and its predecessor, the National Electric Light Association; and their keen sense of loss of a dear friend.

A realist in the classic tradition, Alex Dow had all the attributes of a truly great man and leader and inspirer of men. A clear and penetrating thinker, a master technician, a great industrial leader, with the highest standards of conduct, benevolent in all his dealings, a wise and unselfish public servant, a man of deep learning he was one who balanced brilliance of wit with true humbleness and charity. Of the select group of pioneers of our industry and recognized in his later years as its dean, he was an exemplar of all that is best in a man and in a leader. Now, in grateful remembrance of his labors with us and acknowledgment of the value of his friendship,

BE IT FURTHER RESOLVED that this expression be entered in full upon the minutes of this meeting, and that a copy thereof be transmitted to Mrs. Dow, to his sons, Douglas and Lathrop, and his daughters, Margaret and Dorothy, and to The Detroit Edison Company, in token of our sympathy and as evidence of our admiration and our affection for Alex Dow.

Indiana Association to Hold Meeting at Indianapolis

Due to the rubber situation and world conditions in general, the Indiana Electric Association will forego its annual convention at French Lick, and instead hold a streamlined strictly-business meeting at Indianapolis on the afternoon of Thursday, Sept. 24, and morning and afternoon on Friday, Sept. 25. The meetings will be held in the Assembly Room of the Indiana War Memorial Building.

R. E. Blossom, Secretary of the Association, reports that a program that will fit the times is being developed and that a good attendance is expected.

Utilities War-Time Transportation Problems

By J. G. Holtzclaw

President, Virginia Electric & Power Company

Comments at a Special Meeting of the EEI Operating Committee, New York, N. Y., June 10, 1942

THROUGHOUT the past quarter of a century, the normal functioning of American economy has become helplessly dependent upon transportation by gasoline-driven vehicles on rubber tires, certainly to a far greater degree than any other nation in the world. The electric industry is in the same boat in this respect as practically all other industries of America, except probably more so. Without the automobile, the electric systems of the American utility companies would still be limited in their service scope to the more thickly settled communities as was the case twenty-five years ago.

When Japan conquered Indo-China, British Malaya and the Netherlands East Indies, it cut off from the rest of the world the source of supply of about 90 per cent of its crude rubber. True, this nation has a stock pile of approximately 700,000 long tons of rubber, for which we should be thankful, but this stock pile is necessary for the conduct of the war, for us and the United Nations. If we face a long war, it is distinctly evident that only the most essential automobile transportation can be maintained for the duration and that by a most rigid system of conservation of tires, which means taking care of the tires which we have now in order that we will have tires two years from now. This is our problem—no more, no less—and if we do not conserve now, we will not have tires two years from now.

Our Government recognized this situation very promptly, and within three weeks of the bombing of Pearl Harbor, tire rationing regulations were issued by the Office of Price Administration. At the outset, these regulations, as far as gas and electric utilities are concerned, limited the vehicles for which new tires and tubes could be obtained to trucks used for the transportation of material and equipment for the construction and maintenance of public utility systems; for the transportation of material and equipment for the construction and maintenance of production facilities and for the transportation essential to render electrical repair service.

Certain restrictions were imposed such as the requirement that the applicant must show that the vehicle on which the new tire or tube is to be mounted cannot be replaced by a vehicle owned or operated by or subject to the control of the applicant, which is equipped with serviceable tires and tubes and which is not fully employed. That the new tire or tube is to be installed at once on a wheel to replace a tire or tube no longer serviceable. That the new tire or tube, when added to other tires or tubes in the applicant's possession, whether or not such tires or tubes are mounted on a vehicle, does not add up to more than one spare tire or tube of a given size for each eligible vehicle. That the existing tires cannot be recapped, retreaded or repaired for safe use.

MR. HOLTZCLAW

In January, the list of eligible vehicles was amended to include vehicles used for transportation of employees to and from any power generation or transmission facilities, extractive establishment, construction project except when public transportation facilities are readily available. However, no vehicle was eligible under this paragraph unless it had a capacity of ten or more passengers. This seemed to bar station wagons used to carry men to substations or to carry out line patrolmen, unless repair or maintenance material was also carried along.

Under these regulations a vehicle to qualify as an eligible unit must have been originally designed as a truck. A converted passenger car or station wagon was not an eligible vehicle. However, with the institution of truck rationing, coupes and station wagons that had been converted for meter and service work by public utilities were classified as trucks when it was found that utilities were using a large number of these vehicles that would have to be replaced with trucks if the classification was not changed.

In February, the vehicles eligible for new tires and the regulations governing the use was designated as List "A" and a new classification known as List "B" was adopted to provide recapped or retreaded tires for vehicles used in certain operations not covered by List "A."

Vehicles eligible under List "B" include those used for transportation of persons to enable them to render construction or mechanical service or structural repair and maintenance service; for the transportation of executives, engineers, technicians and workers to and from, or within such of the following as are essential to the war effort: power generation or transmission facilities, transportation facilities or extractive, industrial, military or naval establishments; trucks used for any important purposes not included in List "A". It must be shown that without the vehicle to be equipped, transportation service is not available to applicant. However, it should be borne in mind that no recapped tires are available for vehicles on List "B" until after the requirements of the vehicles on List "A" have been satisfied.

Further changes which became effective June 1, prohibit rationing boards from granting new tire certificates for use on vehicles on List "A" when the tire in use can be retreaded. Also no tires at all will be released after June 1, when it appears that the old tire failed or wore out prematurely because of abuse caused by overloading, underinflation or careless operation.

At present, new tire rationing regu-

lations are being drafted. Indications are that present regulations will be tightened and that many uses now considered eligible will not be included in the new regulations. Contacts in Washington indicate, however, that it will be late in the summer before the revised regulations become effective.

There are about 35,000,000 motor vehicles in operation in the United States, while the tire stock pile available for rationing only contains about 6,500,000 tires. No tires in sizes smaller than 750/20 are being manufactured. Since about 80 per cent of the vehicles in public utility fleets are equipped with tires in the sizes no longer in production, those now on hand both in use and in the stock pile will have to be made to last for the duration.

The tire rationing regulations as they now stand force the utility companies to curtail, and, in some cases, eliminate certain operations and services requiring the use of motor vehicles. The attitude of the rationing officials in O.P.A. toward the public utility problems has been sympathetic, and they have appeared to be glad to discuss matters with the various public utility fleet supervisors who have dropped in to see them. However, they have pointed out that the rubber situation is desperate and that it is going to be necessary to eliminate all use not essential to the war effort and that even some essential operations may have to be curtailed. The general attitude in O.P.A. as regards tire rationing seems to be that if an operation on which a motor vehicle is used has no connection with the war effort or with the public health and safety, it should be eliminated for the duration.

Public utility operations considered non-essential and which authorities think should be discontinued and for which no new tires or recaps will be issued are:

Sales supervision.
Home cooking and lighting demonstrations.
Delivery and pickup of appliances.
Power and industrial engineering, except in connection with direct war activity and then only when public transportation is not available within half a mile.
Responding to general complaints from customers which do not involve an eligible maintenance or repair service.
Meter Reading. The Assistant General Counsel of O.P.A. has this to say about meter reading:

"The problem of meter reading has been given serious consideration and it is fully appreciated that some sacrifices in the speed with which such operations have previously been carried out will have to be made. However, the grave shortage of rubber that faces our Nation at this time is so accute that some of even the most vital needs will go unsupplied. Inasmuch as meter reading does not involve any construction, maintenance or repair service, it is impossible to find eligibility for such service under the Regulations."

Many companies are now reading meters at three-month intervals and we hope to have this practice approved in a limitation order on use of motor vehicles by public utilities which is now under consideration in Washington.

Collections.
Delivery of bills.
High bill complaints.
Delivering checks to employees and pensioners.
Trips by executives and supervisors between company offices where public transportation is available.
Safety activity for construction and inspection. Protective equipment can be transported for replacement and repair.
Inspection of property for insurance purposes.
All claim department activity.
All legal department use.
Engineering—except when directly connected with construction, maintenance and repair projects. No inspections.
Transportation of employees for the purpose of securing rights-of-way or contacting owners of overhanging trees.
Service of minor and portable appliances. All except large fixed appliances such as ranges, refrigerators, water heaters, furnaces, etc.
Periodic meter testing as required by state agencies.
All incidental services which do not relate to maintenance or construction.

Vehicles must be used 100 per cent for eligible purposes in order to obtain tire certificates. Any ineligible use, no matter how small the percentage, bars the vehicle from being eligible for tires or tubes.

As yet no definite instructions have been issued with regard to Customers' Service Calls, but the O.P.A. feels that the utilities can make a substantial saving of rubber through extending the time period from the present practice of giving sudden service to anywhere from four to twenty-hour hour periods so as to permit more economical routing of calls and eliminate doubling back over routes. They have definitely suggested that the service men use public transportation when and where it is available, carrying their tools and fuses in a small kit such as is used by telephone repair men in urban centers. They point out that business as usual is out for the duration and that it is more important at this time to save rubber than to give sudden service.

Under the present truck rationing regulations, no certificate will be granted for the purchase of vehicles to be used as replacements unless it can be shown that the vehicle to be replaced has been reduced to junk. The purchase of additional new vehicles will only be approved when it can be shown that the vehicle is necessary to the war effort.

New gasoline rationing regulations will include trucks as well as all other vehicles. Consideration is being given to public utility trucks equipped with power-driven auxiliary equipment such as winches, compressors, earth borers, etc.

Limitation orders covering Common, Contract, Private and Local Carriers have already been published, and it is understood that orders covering public utility vehicles are under consideration. It is expected that there will also be one covering bus operation.

It would seem to be advisable for the public utilities, if it has not already been done, to join in a nation-wide survey covering the eligible vehicles in use in the industry, the size of the tires used and the number of wheels on the road. There are indications, so I am advised, that tires may be rationed only to industries considered essential and that certain stock will be earmarked for the various approved industries. In this case, these figures would be needed and there would be insufficient time to satisfactorily cover the field after such regulations are issued. It is evident that there are not enough tires and tubes to go around even on this basis and that each industry will have earmarked for its use a percentage of the whole, based on its importance in the war effort. It appears that the Common Carrier will receive first consideration.

The following remarks made by R. C. Harrison, Eligibility Officer for O.P.A., in his discussion of rationing problems with utility fleet operators, indicates the attitude of O.P.A. towards the rationing problem:

"We appeal to you, apart from your rights, to do everything you can to conserve rubber. It is one of those needs not exaggerated, it is essential for the prosecution of the war. It will be a long time before we get any more rubber. Any man with consideration for the welfare of his country should lean backwards to conserve rubber. He should not suit his convenience but should be guided by national necessity. All you gentlemen agree with that view."

The automobile owners and operators of America must heed this advice and adopt a rigid conservation program or else this is what will happen as concerns the 27,940,000 passenger cars in the country, including those in the hands of private owners and frozen in the hands of dealers or governmental agencies, based upon figures which I have taken from "Automobile Transportation in the War Effort," published by the Brookings Institute of Washington, D. C.

First, assume no family or individual

(*Continued on page* 248)

The Personnel Problem of the Electric Industry Under War Conditions

By Tom P. Walker

Chairman, Council of Electric Operating Companies

Comments at a Special Meeting of the EEI Operating Committee, New York, N. Y., June 10, 1942

THROUGH the inexorable operation of Selective Service regulations, manpower placement laws and economic compulsion, the productive skill and labor of the nation is rapidly being sifted into four classifications: 1) the fighting forces, 2) war production, 3) support of the war effort and, 4) non-essential production for civilian comfort and convenience.

This war must be won by armed fighting men finally routing the enemy. Only physically strong trained warriors can do that job, hence the Selective Service System must have the first call on the men it needs for the fighting forces.

The second classification (war production) supplies implements for the fighting man and nothing else. Only the manufacture of equipment which shoots or flies, or floats or swims qualifies for this group—ships, planes, tanks, guns and other materials directly used in the prosecution of the war.

In the third classification fall activities which support the war effort including food, clothing, shelter, health, safety, electric power, and other requisites of our daily life.

Then, in the fourth group are activities which produce solely for non-essential civilian comfort and convenience.

Patriotic fervor and the operation of the Selective Service Act are maintaining a constant flow of men into the first group. High wages supported by unprecedented public spending assure almost complete satisfaction for the second group. But the filling of jobs in these two groups has been almost wholly at the expense of the activities included in groups three and four, causing many a headache for businessmen and personnel directors.

A hitherto abundant life for civilians is now feeling the effects of reduced production as men and enterprises leave group four to join with or convert to groups one or two. By and large, civilians conform cheerfully to rationed living, or at least console themselves with a minimum of complaint. No one can argue with conscience that business as

MR. WALKER

usual should continue for civilians so long as our fighting forces lack tools. It is inevitable that they and those who supply their luxuries and conveniences must suffer discomfort and even hardship. Enterprises that fall in group four and those whom they serve, therefore, must be prepared to take the rap.

But for the third group, which includes our industry there is small opportunity for curtailment and the pressure for the transfer of men into groups one and two is constant and impelling. Operation of facilities which supply power to war production plants is vital. That portion of the electric business, however, which supplies power for cooking, lighting, entertainment, and other conveniences not absolutely essential to implement the soldier at the front, can only be continued as long as it does not interfere with the main job. Any man able to fight or produce materials of war whose loss would impair only these non-vital services cannot be considered a critical employee and probably will not be allowed to stay in his present job.

Because the production, transmission and distribution of electric power is an activity which supports the war effort, the Selective Service System has advised local draft boards in their Occupational Bulletin No. 9 that there are 86 critical occupations in which qualified men must be continuously available to assure proper functioning of the industry. Boards may not take men from these critical occupations unless others who are qualified can be found either in the industry itself or elsewhere to take over their jobs.

Draft boards generally have appreciated the importance to war production of the electric power industry, and especially before Pearl Harbor, were rather lenient with the man who had an important job in a power company. Since Pearl Harbor when it has been necessary to fill ever expanding quotas for men in the armed forces, they have frequently overlooked the necessity to maintain competent personnel for critical occupations in electric utilities. The industry itself, on the other hand, has hesitated to ask deferment on necessary men to the point where finally it found it difficult to carry on necessary operations because of the loss of critical personnel. Now that critical occupations have been defined, draft boards need no longer take necessary men nor need executives be embarrassed when seeking their deferment.

It is important to note that it is the job which is critical and not the services of the particular man who holds it. Because a man fills a critical occupation, is no basis for his continued deferment. His job does not protect him against the draft. If he is subject to the draft, he can be deferred only as long as it takes to train or find a man to take his position. If there is a qualified man available, then he must replace the man to be drafted. If one is not available, Selective Service Regulations contemplates that the industry will train its own replacements using women or men not likely to be drafted if at all possible. It is the responsibility of the draft boards to allow the industry to maintain qualified personnel for critical occupa-

tions, but it is equally the responsibility of the industry to provide such training and replacement as will require a minimum deferment of necessary men.

There is a distinction between the classification of men in war production activities and those in activities which support the war effort in that the otherwise qualified draftee in war production is given a Class 2-B rating while those in the activities supporting the war effort are rated 2-A. The difference in these ratings does not necessarily represent a difference in the essentiality of occupations. Under Selective Service Regulations, a Class 2-B man and a Class 2-A man are equally important to war production, and the class serves to distinguish the type of industry in which the man is engaged.

Occupations not listed in the Occupational Bulletin or not falling within descriptions of the listed job titles are not critical occupations and accordingly, draft boards are not required to consider applications for deferment of men in them, but they may do so if there are other compelling factors in the situation. Not all payroll designations of critical jobs are included in the 86 on file with the draft board. Many men actually in critical occupations will not find an exact counterpart of their payroll designation in this list. There is on file with the National Headquarters of the Selective Service System, 53 job descriptions, covering the 86 job titles, and it is these descriptions as interpreted and amended by Selective Service that controls rather than the title itself. If an electric company asks for deferment of a man who it knows is in a critical occupation as contemplated by the regulations, it should be able to convince the local draft board that that man falls in one of the 86 job titles listed. All Agencies of the Selective Service System may request information on job description from the System's National office to assist them in their consideration of the registrant's case. An unofficial list of job descriptions has been published in *Electrical World*.

The policy of the National Headquarters of the Selective Service System as announced since Pearl Harbor plunged us into war is well laid out in their Memorandum I-405 issued on March 16, 1942. Copies of this Memorandum were furnished to all members of the Edison Electric Institute and can still be secured either through the local draft boards or State directors of Selective Service. It furnishes a reliable guide to those who must keep essential industries operating and at the same time are trying to perform their patriotic duty and contribute every possible human or mechanical facility to the war effort.

The drafting of men for the armed forces is not the only personnel problem which electric utilities have to face. Constrained by fixed rates and mounting taxes, it is impossible for operating companies to compete with the skyrocketing wage and salaries paid in war production plants. Wage scales in our industry have always been well up toward the top and still compare reasonably well with wages paid in other industries. Continuous employment, pension plans and the stability of the business have always attracted the most competent men and women so that now expanding war production activities find a fertile field for trained and capable personnel. Many attracted by the larger pay envelopes provided by much overtime have left their long-time careers to take a flyer in the new venture. Recent statements from the Chairman of the new War Manpower Commission announce that measures to prevent the pirating of essential war workers are being drawn up and will shortly be issued. The fact that the electric power industry has been officially declared to be essential to the support of the war effort places it in a position to benefit from whatever plan is announced and should assist in protecting the 86 critical listed occupations against this sort of pirating.

One other phase of this personnel problem which may become more acute is the possibility that men now classified as 3-A or 3-B because of dependents may be drafted. In a Memorandum No. I-416, dated April 21, 1942, the National Headquarters of the Selective Service System outlined a new more rigid policy on the classification of men with dependents. Should Congress provide for compensation for the dependents of drafted men, there may be a wholesale drafting of these men. No manager should feel too confident that he will be allowed to retain an employee because he now has a Class 3-A or 3-B rating, and active training of replacements for men with limited dependency should be considered.

The personnel picture for electric companies is clear if not too encouraging and can be simply stated—somewhere down the line every man subject to and qualified for the draft faces the possibility of induction in the armed forces. If he is now in a critical job, he can be deferred from time to time as may be necessary to secure or train a qualified man to take his place, but there is no assurance that he will be deferred indefinitely. If he is not in a critical job, he cannot be deferred. A necessary man in a critical job, not subject to the draft should not be available to a war industry under the policy announced by the Manpower Commission—the details of which policy have not yet been published. A man not in a critical job is exposed to all the lures of high-paid war work and the tendency will probably be to steer him that way.

When a company finally places non-draftable men in all its critical positions, and fills all non-critical jobs with women or men not suitable for war production plants or subject to the draft, then its personnel may be considered stabilized —at least until some change such as the lowering of physical or mental standards for induction is made and there results a reclassification of exempt men.

Of course, once the war is over, and men return from the service expecting to find their old jobs waiting or those who took a flyer in war production again seek a place in industry, much of the shifting now going on will have to be unwound. Then a new chapter will begin, the outlines of which now cannot even be surmised. But this can be said: When finally the contribution of this industry to the war effort is appraised, it will be found in the very lead in many endeavors, but notably as having supplied large numbers of trained, intelligent, patriotic men and women to every war agency. Soldiers and sailors, fighters and technicians in all ranks and branches of the armed forces—highly skilled men and women in critical jobs of every war production plant—outstanding men furnishing trained and experienced judgment on planning boards and bureaus—these and many more unselfish, patriotic citizens carry on in war the same sound, honest traditions of service which have made this industry an essential part of our national and our personal lives.

EEI PUBLICATIONS

A catalog of all EEI publications is available upon request to

EDISON ELECTRIC INSTITUTE
420 Lexington Avenue, New York

Current Accounting Problems

By G. H. Bourne
Chairman, Accounting Executive Committee

Comments at a Special Meeting of the EEI Operating Committee, New York, N. Y., June 10, 1942

THE exigencies of the war are compelling the utilities to review many well-established procedures and to revise accounting practices and modify methods in an effort to carry on the work of supplying "facts and figures" to the management and regulatory authorities. We have already felt the effect of losing employees to the armed forces and to war production industries and experienced the difficulty of securing replacements. Restrictions on the use of automotive equipment and the purchase of mechanical equipment so essential to modern accounting systems are creating problems which must be overcome. These conditions will become progressively intensified as the war program is speeded up.

The accounting organizations are losing experienced personnel which can not be replaced without months of training, and since we must safeguard the jobs of men being called to the service of our country, we are finding it necessary to carry on the work with fewer men. This means we shall have to do one or more of the following:

(1) Discontinue every statement and report that is not absolutely necessary, or that may be dispensed with during the present emergency;
(2) Streamline necessary reports;
(3) Rearrange the work so that the remaining employees can do the work required without replacing the men who are leaving;
(4) Replace men with women workers wherever possible;
(5) Revamp, consolidate, or eliminate accounting procedures and routines.

In making changes, care must be exercised to maintain the system of internal check, which consists of setting up the accounting records, methods and procedures, so that no part is under the absolute and independent control of any one person, and so that the work of one employee is complementary to the work of another. Due to the reduction in the number of trained employees, it will become more difficult to maintain these internal checks, but it increases the importance of protecting the company's funds and property.

Some of the subjects that are being studied by the accountants at the present time, and are of current interest, may be mentioned as follows:

MR. BOURNE

(a) Priority restrictions on the purchase of accounting machines and equipment;
(b) Preparation of reports and statements;
(c) Preservation and destruction of records;
(d) Changes in meter reading and customers' billing procedures.

Priority Restrictions

On March 15, 1942, the WPB issued an order freezing production of all typewriters, adding machines, bookkeeping machines, billing machines, receipting machines, etc., and since that time these machines may be purchased only by filing PD-1A applications and receiving high priority ratings. A number of utilities have filed PD-1A applications with the WPB for the purchase of accounting machines and equipment to replace worn-out machines and to supplement existing equipment, and in practically every case these applications have been denied. National Cash Register Company, Burroughs Adding Machine Company and Remington Rand, Inc., have been requested to convert one or more of their plants to the production of war materials, and the entire output of IBM machines is being taken by the government. Therefore, it seems evident that the utilities will be unable to purchase any new machines for some time, and will have to get along with their existing equipment. This condition will cause an increase in the cost of repairs, and will also increase the cost of doing the work because more work will have to be performed manually, when it becomes impossible to repair the machines now in use. In some instances accounting machine manufacturers are endeavoring to supply the needs of utilities by furnishing factory rebuilt machines which may be purchased without priorities. These rebuilt machines, where they can be obtained, will serve the same purpose as new machines during these times.

Preparation of Reports and Statements

Companies are reviewing the reports and statements that are being regularly prepared for the purpose of eliminating those that no longer serve a useful purpose, or to have such reports prepared less frequently; namely, quarterly, or semi-annually, instead of monthly. Too often a report or statement is requested for a particular purpose and is continued unnecessarily after its purpose has been accomplished. A list of all reports being prepared regularly for supplying information, as distinguished from reports that are necessary for accounting records can be prepared showing the title of the report, how often prepared, number of copies, to whom distributed, etc. The various department heads, managers, and executives should review this list of reports and decide which can be eliminated entirely and those that can be prepared at longer intervals.

This subject was discussed at some length at the recent meeting of the utility accountants held in Cleveland on May 11 and 12, where Mr. J. S. Phillips of the Ohio Fuel Gas Company (Columbia Gas & Electric system) presented a most interesting paper.

Along this line some companies have changed the style of their house organs, such as from a magazine form to tabloid style, and effected a substantial saving in printing costs.

The Pennsylvania Public Utility Commission recently agreed to eliminate

a certain number of schedules from the annual report to be filed by utility companies. This is a step in the right direction, and we hope that other regulatory bodies will do likewise, because the number of governmental reports has increased tremendously during the past few years.

At the meeting of the Accounting Executive Committee held in Cleveland last month, it was decided to delegate a committee to contact the various Federal Bureaus in an endeavor to obtain relief from the burden of preparing the large number of reports now being required by governmental authorities.

Preservation and Destruction of Records

The Rules and Regulations of regulatory authorities require that records be retained for definite periods of time. For companies that are subject to the jurisdiction of the Federal Power Commission, Order No. 54 has been issued governing the preservation and destruction of all records. In many instances these rules require the retention of numerous classes of records permanently, which is an everlastingly long time, and others for ten years. Such items as checks are required to be retained ten years and quite a pile accumulates in that time, particularly dividend checks and payroll checks, and the period is longer than the usual statute of limitations. The periods prescribed are frequently longer than deemed necessary by sound business judgment and require the retention of many kinds of papers beyond the time they can serve any useful purpose. Companies are finding it increasingly difficult to provide space and obtain adequate filing equipment for such purpose and are confronted with the added problem at this time of providing suitable facilities so that their records will be safeguarded against air raids and incendiary bombs. Some companies along the coastal areas are considering storage at remote locations or duplicating records by microfilm or some other reproduction method; whatever practice is followed will be expensive. The observance of some of these requirements of regulatory bodies is becoming such a burden on companies that some relief should be granted and the existing rules and regulations should be modified. The accounting committee plans to take this matter up with regulatory authorities.

Changes in Meter Reading and Customers' Billing Procedures

Due to the shortage of men, and the restrictions on automobiles, tires, etc., a number of companies are adopting or are considering the adoption of bi-monthly, or quarterly meter reading plans. During recent years the utilities have experimented with the practice of rendering estimated or averaged bills to customers whose meter readings could not be obtained by the meter reader on the regular meter reading days because of the customers' absence from the premises. A recent check indicated that more than 5 per cent of the customers have been billed on this basis and that practically no complaints were being made by customers. This practice has received customers' acceptance, primarily because the paying habits of most customers are such that they prefer to receive a bill each month and would rather have an estimated bill than one covering a longer period.

During the first World War a number of companies found it necessary to adopt the practice of reading meters and rendering bills every two months. Under this plan, a month's revenue is deferred indefinitely, and the customers receive bills for two months' service, every other month. After the close of the war all companies except one large company, reverted to the practice of reading meters and rendering bills every month, because it was felt that the paying habits of the customers made it advisable to render a bill each month.

During recent months the regulatory commissions of the States of Wisconsin, Michigan, New York, and South Carolina have issued orders approving the reading of customers' meters bi-monthly, or quarterly, and the rendering of estimated bills in the intervening months. Commissions in other states have approved similar plans.

Two methods of determining the estimated bills are being generally used; viz.:

(1) Based on customers' previous actual use, taking into consideration all the factors which may affect the amount of the bill, including the average use for the past few months, the use for the same month last year, the season of the year, and any known factors, which may affect the individual account;

(2) Based on one-half of the sum of the two bills for the previous two months. The following month, when the meter is read, the consumption for the two months is computed by doubling the blocks in the applicable rates and deducting from such amount, the estimated amount billed in the intervening month.

Some companies are permitting the customers to read their own meters, and are supplying postcards, on which the meter readings can be reported. This plan is apparently working satisfactorily in some of the rural areas, but has not been accepted by very many customers in the urban and suburban territories. It does, however, give the customer an option in case he objects to the estimated bill.

Some of the more important details to be considered, in addition to the method to be used in computing bills in the intervening month, are as follows:

(1) Type of customers to be included—some companies are including only rural or suburban customers, while others are extending it to all customers, except commercial customers in the downtown areas of large cities whose meters can be read on foot, and demand customers, and industrial users;

(2) Form of bills to be rendered to the customers;

(3) Rearrangement of meter route schedules, so that one-half or one-third of the meters will be read each month;

(4) Instruction of the office personnel so that they will be able to satisfactorily explain the change in system to the customers;

(5) Preparation of advertising, letters to customers, bill stuffers, etc., explaining the plan;

(6) Preparation of petition or communication to the State Commission requesting approval of the plan, primarily so that the estimated bills will have the same force and effect as actual bills.

Other problems of an accounting nature also are involved, such as the mechanical limitations of the machines in use, the change in procedure to compute estimated bills, etc., but these are details which the accountants can work out in consultation with the operating officials. The primary reasons for extending meter reading periods are the loss of personnel and the automobile situation, but material savings are possible of attainment. Based on studies made by some companies which are adopting skip meter reading plans, the estimated savings in meter reading expense amount to approximately 33 1/3 per cent under the bi-monthly plan and about 50 per cent under the quarterly plan. The cost of preparing customers' bills is not affected materially under either plan because the increased clerical work required to compute estimated bills in the office is offset by a reduction in the cost of the billing operation.

Occasionally you hear of a company trying out female meter readers to replace men lost to the service and also the use of bicycles in order to save automobiles, tires and gasoline. These are probably temporary measures for the duration, but the bi-monthly or quarterly meter reading is a very practical development and should remain as standard practice after the emergency, because the savings for some companies will be substantial.

Report of the Prize Awards Committee

By H. P. Liversidge

Chairman, Prize Awards Committee, Edison Electric Institute

Presented before the Annual Meeting of the EEI, New York, June 11, 1942

THE hardest job connected with the administration of the several competitive prize awards sponsored annually by the Institute is that of the judges who do all the spade work of sifting, analyzing and finally reaching what is sometimes a unanimous and frequently a hair-line decision as to the winner of a particular prize. To the judges who have done this work and to the donors of the awards, I want to express the appreciation and the thanks of the Prize Awards Committee.

The pleasantest part of the job is that of announcing the winners, which, as Chairman of the Committee, I am privileged to do.

The awards, as most of you know, are the Claude L. Matthews Valor Award, the James H. McGraw Awards, the Augustus D. Curtis Awards, the George A. Hughes Award, the Thomas W. Martin Rural Electrification Award, the Laura McCall Awards, the Modern Kitchen Bureau Awards, the Reddy Kilowatt Award and finally the Charles A. Coffin Award, which, for twenty years has been recognized as the outstanding symbol of distinction that might be earned by an operating company.

The Claude L. Matthews Valor Award

This award was established by Mr. Matthews, Vice-President of W. N. Matthews Corporation, as a token of recognition for acts of devotion to duty and courageous effort in maintaining or restoring electric service under hazardous conditions.

The judges of this award, Mr. N. M. Argabrite of the American Gas and Electric Company; Mr. A. E. Silver of Ebasco Services Incorporated and Mr. W. R. Smith of the Public Service Electric and Gas Company, have awarded a citation, a lapel decoration and a cash prize of $150 to Mr. Ralph Jackson of Pineville, Ky., an employee of the Mountain Division of the Kentucky Utilities Company.

The judge's citation of Mr. Jackson's action that is commemorated by this award, reads:

"A severe storm on March 10, 1941, broke the span crossing the Cumberland River near Harlan, Kentucky, of the line of the Kentucky Utilities Company supplying the town of Harlan, interrupting service to more than 1900 consumers and throwing the town into darkness. To restore service, it was necessary to get a rope across the river as a means of replacing the span. The flow of the river was enlarged by heavy rains, the water was icy cold, and no boat was available. Under these circumstances, Ralph Jackson, a member of a repair crew, volunteered to swim the river and carry the rope. This feat was successfully accomplished and service was promptly restored to the town of Harlan. By this voluntary action, Jackson showed a high measure of courage and devotion well beyond the reasonable demands of duty."

The James H. McGraw Awards

These awards were established nearly a generation ago by the Honorary Chairman of the McGraw Hill Publishing Company, whose name they bear, and have been the incentive for many original contributions to engineering literature of great value to the industry.

The judges for this award were Mr. M. D. Hooven, Public Service Electric and Gas Company; Mr. Frank R. Innes, Managing Editor of *Electrical World*, and Mr. M. F. Stack of Ebasco Services Incorporated.

The Claude L. Matthews Award

FOR VALOR

Administered by the Prize Awards Committee of the Edison Electric Institute

This Certificate is Awarded to

Ralph Jackson

of the Kentucky Utilities Company, Pineville, Kentucky,

in recognition of his devotion to duty wherein extraordinary courage and resourcefulness were exercised in restoring electric service under the circumstances cited hereon.

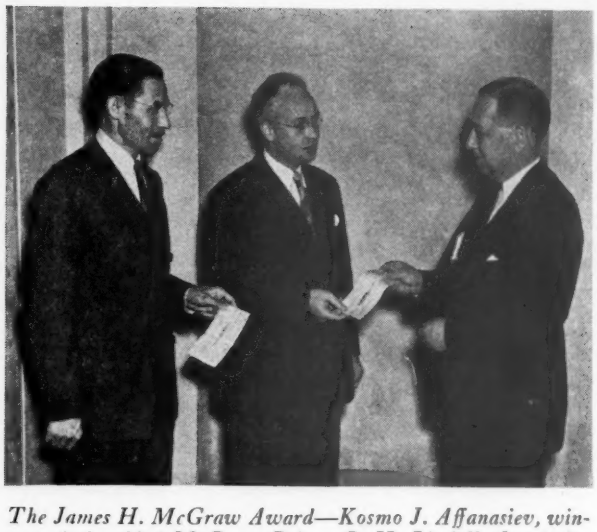
In Witness Whereof, the President of the Edison Electric Institute and the Chairman of the Prize Awards Committee by authorization of the Prize Awards Committee have affixed their signatures this 11th day of June, Nineteen Hundred and forty-two.

Citation

A severe storm on March 10, 1941, broke the span crossing the Cumberland River near Harlan, Kentucky of the line of the Kentucky Utilities Company supplying the town of Harlan, interrupting service to more than 1900 consumers and throwing the town into darkness. To restore service, it was necessary to get a rope across the river as a means of replacing the span. The flow of the river was enlarged by heavy rains, the water was icy cold, and no boat was available. Under these circumstances Ralph Jackson, a member of a repair crew of the company, volunteered to swim the river and carry the rope. This feat was successfully accomplished and service was promptly restored to the town of Harlan. By this voluntary action, Jackson showed a high measure of courage and devotion well beyond the reasonable demands of duty.

Attest

Certificate accompanying the Claude L. Matthews Valor Award to Ralph Jackson.



The James H. McGraw Award—Kosmo J. Affanasiev, winner of the third McGraw Prize; C. H. Lindell, first prize winner and S. B. Williams, editor of Electrical World, representing the donor

The Augustus D. Curtis Award—H. M. Sharp receives for his company, The Buffalo Niagara Electric Corp., the second prize; E. B. Richey receives for the Birmingham Electric Company, the third prize. Kenneth Curtis, one of the donors, is at the right.

The first McGraw Prize, $250.00 in cash, has been won by Mr. C. H. Lindell of the Cincinnati Gas and Electric Company for his paper "Design of 33,000 Volt Wood Pole Line." The second prize, $150.00 in cash is awarded to Mr. Charles L. Betts, Jr., formerly of the Westchester Lighting Company for his paper "The Sequence Relay—A Device to Provide Short-Time System Separation on Long Period Oscillations," and the third prize, $100.00 in cash, goes to Mr. Kosmo J. Affanasiev of the Pennsylvania Water and Power Company, Baltimore, for his paper "Procedure of Measuring Obsolescence in Machinery and Plants."

The Augustus D. Curtis Awards

These awards are made in memory of the late Mr. Curtis by his sons, Darwin and Kenneth Curtis of Curtis Lighting, Incorporated, and are offered for distinguished contributions to the advancement of higher levels of illumination in the interiors of commercial buildings.

Judges of this contest were Mr. C. L. Davis of Batten, Barton, Durstine and Osborn; Mr. J. W. Carpenter of Long Island Lighting Company and Mr. Henry G. Dooley, Associate Editor of *Electrical World*.

A record number of exhibits were submitted in this contest and the judges report that it was unusually difficult to arrive at a decision since the majority were of prize winning calibre and required closest consideration. Their final decision was:

First prize to The Ohio Public Service Company, Cleveland, the certificate of accomplishment to the company and a purse of $200.00 to Mr. Walter C. Schultz, who submitted the company's entry. Second prize, a certificate to the Buffalo Niagara Electric Corporation, and a cash award of $100.00 to Mr. Howard M. Sharp.

The third prize, is won by the Birmingham Electric Company, with a $50.00 award going to Mr. E. B. Richey. The fourth prize goes to the Central Illinois Light Company, with a $25.00 check to Mr. Jesse C. Anderson. Honorable mention awarded to the New York Power and Light Corporation, Troy, and the Wisconsin Public Service Corp., Green Bay.

Charles L. Betts, winner of the Second James H. McGraw Prize.

The George A. Hughes Award

This award, established by the Chairman of the Board of the Edison General Electric Appliance Company is offered in recognition of distinguished contributions to the development of the market for electric ranges through direct or cooperative promotion or selling or both, during the year 1941.

The judges for this award were Mr. J. M. Nelson, Associate Editor of *American Magazine;* Mr. Arthur P. Hirose, Advertising Director of *McCall Magazine,* and Mr. L. E. Moffatt, Editor of *Electrical Merchandising.*

First prize of this award, a silver trophy, goes to the Pacific Gas and Electric Company, San Francisco, together with a check of $500.00 to be distributed to the individual or individuals responsible for the achievement. The judges particularly commended the comprehensive plan of the company for promoting electric cooking and the effective execution by a company engaged in selling both gas and electric services.

A certificate of accomplishment and a cash award of $300.00 goes to the West Texas Utilities Company, Abilene, Texas. This company created a plan which produced an enviable sales record on electric ranges.

The Thomas W. Martin Award

This award is a bronze plaque offered by the President of the Alabama Power Company to the operating company which has shown the greatest contribution to agricultural advancement within its territory through promotion of uses of electricity, development of rural load, cooperation with other agencies, extension of rural lines, organization and planning for development of rural electrification.

Judges for the awards were Mr. George W. Kable, Editor of *Electricity on the Farm;* Mr. William M. Mumm, President of Mumm, Romer, Robbins and Pearson, Inc., and Mr. Frank E. Watts, of the *Farm Journal Magazine.*

The winner of the Martin Award this year is the Puget Sound Power and Light Company, Seattle, Washington.

The judges have especially commended this year's winner as having a successful plan of promoting the use of electricity in agriculture with both educational and promotional features to help the farmer in obtaining greater food production through electrical applications for labor efficiency.

Laura McCall Awards

These awards are offered by McCall's Magazine, in memory of the late Laura McCall, for outstanding achievements by the Home Service departments of operating public utility companies in the advancement of electrical living in the home through the promotion of electrical appliances and home lighting equipment.

Mrs. Harriet G. West winner of the third Laura McCall Award.

The judges for these awards were Mrs. Helen Judy Bond of Columbia University; Miss Eloise Davison, Director of the *Herald Tribune* Institute; Mr. L. E. Moffatt, Editor of *Electrical Merchandising;* Mr. H. P. J. Steinmetz, Vice-President of Public Service Electric and Gas Company, and Mr. C. E. Greenwood of the Edison Electric Institute.

The Idaho Power Company receives the first prize, the plaque, and to Miss Margurette Reinhart, Home Service Director goes a cash award of $100.00.

The second prize an illuminated parchment, goes to the Nebraska Power Company, and to Mrs. B. E. Marsh, Home Service Director, the cash award of $50.00.

The third prize, a parchment, goes to the Oklahoma Gas and Electric Company, and to Mrs. Harriet G. West, Home Service Director, a cash award of $25.00.

Honorable mention is accorded the Staten Island Edison Company and the Union Electric Company of Missouri.

In this contest also, experienced Judges found it difficult to tip the balance between winners and losers. The reports submitted by the winners evidence broad-gauged plans and policies in operating the Home Service Departments of our utilities in rendering of service to the consumer.

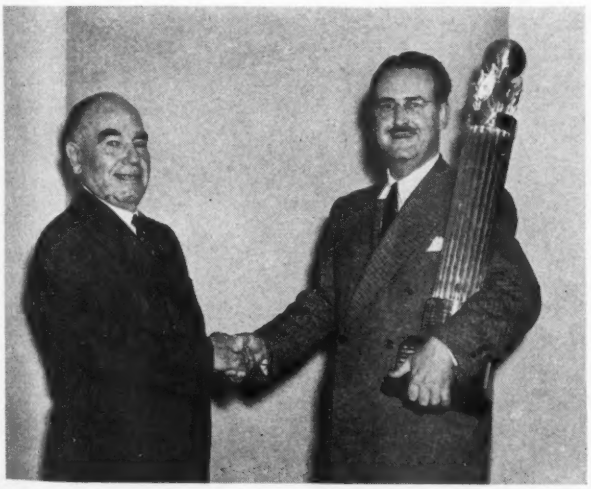
The National Water Heater Awards of The Modern Kitchen Bureau

These awards were offered to operating companies for the best all-around promotion and sales of electric water heaters in 1941.

Judges for this contest were Mr. Henry G. Dooley, Associate Editor of *Electrical World;* Mr. Walter J. Daily of Roy S. Durstine, Inc., and Frank E. Watts of the *Farm Journal* Magazine.

The first prize, a certificate and $500.00 in cash, is awarded the Puget Sound Power and Light Company. The company conceived an unusually thorough plan of operation and pursued it with vigor. The excellence of the execution of its program is attested by the fact that the company sold 49 water heaters per thousand residential customers and increased its percentage of sales over 1940 by 93 per cent.

The second prize, a certificate and $300.00 in cash is awarded the West Penn Power Company. The company



The George A. Hughes Award—Mr. Hughes (left) congratulating Bert W. Reynolds, holding the trophy awarded to his company, the Pacific Gas and Electric Company.

Laura McCall Awards—Mrs. B. E. Marsh holds the second prize awarded to her company, the Nebraska Power Company; Miss Camille Davied representing McCall's Magazine and Miss Margurette Reinhart, with the first prize, an engraved plaque awarded to the Idaho Power Company.

Modern Kitchen Bureau Water Heating Awards—Patrick Johnson, left, received for his company, the Puget Sound Power and Light Company, the first award; Edwin Vennard, Chairman of the Modern Kitchen Bureau; and Leslie B. Pierson, who accepted for his organization, the Knoxville Electric Power and Water Board, the third award.

Modern Kitchen Bureau Water Heating Award—P. H. Powers, left, accepts for his company, the West Penn Power Co., the second award from Edwin Vennard, Chairman of the Modern Kitchen Bureau.

designed and carried out a comprehensive program for a 91 per cent increase in sales over sales in 1940.

The third prize, a certificate and $200.00 in cash, goes to the Knoxville Electric Power & Water Board. This organization sold 39.8 water heaters per thousand residential customers for an increase of 53.5 per cent over sales in 1940.

Reddy Kilowatt Award

This award is a bronze plaque offered by Ashton B. Collins to the company that best illustrated, humanized and simplified its 1941 Annual Report to Stockholders.

The judges of this contest were Mr. Merryle S. Rukeyser of the International News Service; Col. H. S. Bennion of the Edison Electric Institute and Mr. S. B. Williams, Editor of *Electrical World*.

The judges were impressed with the number and character of the entries showing a tendency on the part of electric utilities toward a more understandable and appealing statement of the operations and accounts of the companies. There was apparent, too, through the reports a generally good story of the effect of the war on these companies. Emphasis was being placed upon the importance of American business management to the industries war preparedness.

The Dallas Power and Light Company, Dallas, Texas, has been judged the winner of this prize, on the basis of overall readability, simplicity and general friendly approach.

The judges have accorded honorable mention to the annual reports of the Hartford Electric Light Company, Hartford, Conn., for its completed story which well summarized the ten-year period from 1931 to 1941 and stressing, too, its sixty years of public service, and to the Illinois-Iowa Power Company of Decatur, Ill., because of its intimateness and informative discussion of operations.

Edison Electric Institute Medal

Eighteen Edison Electric Institute Medals have been awarded to employees of electric utilities, for successfully resuscitating individuals by the prone pressure method, since June of last year. The total number awarded since the inception of the medal in 1933 is 121 medals. The committee of judges awarding this medal are Mr. Wills W. Maclachlan, chairman, Mr. W. R. Smith, H. J. Burton and Miss Mae B. Woods, secretary.

Those awarded the medal during the past year are: C. William Muehlberger of the Pennsylvania Power and Light Company; Bernard G. Hedlund of the Minnesota Power and Light Company; J. M. Loveless' Line Crew of the

(*Continued on page* 248)

Reddy Kilowatt Award—W. N. Lewis of Ebasco Services accepts for the Dallas Power and Light Company, the plaque presented by Ashton B. Collins.

Utilization Voltage Standardization Recommendations

From a Joint Report of the Electrical Equipment, and Transmission and Distribution Committees, EEI

EDITOR'S NOTE: Following the formal approval of the accompanying recommendations at the meeting of the Electrical Equipment and Transmission and Distribution Committees in Chicago last month, the recommendations with the report of the committees were transmitted to the Joint EEI-NEMA Committee on Preferred Voltage Ratings for A-C Systems and Equipment to serve as a basis of further work by the Joint Committee. An article by Howard P. Seelye on Utilization Voltages, based on investigations of the two EEI committees formulating the recommendations, appears in the March, 1942, EEI Bulletin, pp. 83-87.

A NEW joint EEI-NEMA Committee on Preferred Voltage Ratings for A-C Systems and Equipment was organized in 1938 to review the 1930 report of a similar joint committee and to make such recommendations and changes as might seem advisable. It was recognized at that time that voltage standardization should begin at the customer's premises and that the Electrical Equipment and the Transmission & Distribution Committees of the Edison Electric Institute should study the problems and make recommendations in regard to reasonable utilization voltage standards.

For the past four years, the Electrical Equipment Committee and the Transmission & Distribution Committee of the Edison Electric Institute have been actively studying the problem of utilization voltage standards. The need for such standards arises specifically from the multiplicity of service voltages which are in use throughout the industry. This has led to demands for considerable variety in the ratings of utilization equipment and to the fear that the variety may tend to increase unless some steps are taken to establish standard utilization voltage limits. It is hoped that the results of these studies will encourage a greater degree of standardization of utilization voltages and of equipment design and that they will contribute to a better understanding of all of the problems involved.

Objective

If ultimate standardization of utilization voltages is to be realized, these studies must accomplish two objectives:

1. Determine reasonable utilization voltage spreads and the limiting values for which

RECOMMENDATIONS

The following recommendations (except for minor changes) have been made by the Transmission & Distribution Committee and have been approved by letter ballot of the Electrical Equipment Committee. These voltages are to be construed as 5-minute mean values.

I. *Single phase utilization equipment should be designed to operate within the limiting values of the utilization voltage spreads given below:*

	Preferred Voltage Spread	Other Values to be Recognized in Equipment Design: Maximum Spread of Voltage Generally Experienced	Other Values to be Recognized in Equipment Design: Extreme Limits for Dependable Operation
Upper Voltage Limits	125	127	130
Lower Voltage Limits	110	107	105
Voltage at Which Motors Should Start Under Load	90	90	...

These values should be multiplied by 2 to obtain the values between the outside wires of 3 wire, 120/240 volt, single phase circuits.

II. *Low voltage polyphase motors and their associated control equipment should be designed to operate within the limiting values of the utilization voltage spreads given below:*

Motor Voltage Class	Preferred Voltage Spread Minimum	Preferred Voltage Spread Maximum	Other Values to be Recognized in Equipment Design: Maximum Spread of Voltage Generally Experienced Minimum	Maximum	Other Values to be Recognized in Equipment Design: Extreme Limits for Dependable Operation Minimum	Maximum
220V	197	245	193	250	190	254
440V	394	490	386	500	380	508
550V	493	612	483	625	475	635

The committees find that the present equipment design voltage for low voltages general purpose motors are adequate for general needs and consistent with the utilization and service voltages herein recommended.

III. *High voltage polyphase motors and their associated control equipment should be designed to operate within the limiting values of the utilization voltage spreads given below:*

Nominal Circuit Voltage	Preferred Voltage Spread Minimum	Preferred Voltage Spread Maximum	Maximum Spread of Voltage Generally Experienced Minimum	Maximum
2300-2400	2200	2600	2100	2680
4000-4160	3810	4500	3640	4640

IV. *Satisfactory utilization voltages should result for all classes of customers if distribution systems are designed and operated to maintain service entrance voltages within the limiting values (flicker conditions excepted), or multiples thereof, given below:*

	Service Voltages: Even Ratio Systems (a)	Service Voltages: Odd Ratio Systems (b)
Maximum	127/254	127/220
Preferred Maximum	125/250	125/216
Preferred Minimum	113/226	117/202
Minimum	110/220	114/198

(a) Single phase three-wire secondary voltages.
(b) Three phase four-wire secondary voltages.

the manufacturers should design utilization equipment to operate.

2. Indicate desirable limits of service voltage spreads, corresponding to the utilization voltage spreads in (1), which can be used as a guide for the design and operation of distribution systems.

As a corollary to Item 2, these studies should lead to a better understanding of the relationship between utilization voltages and service voltages and to the proper allocation of the permissible service voltage spread among the various component parts of the distribution system.

Method of Approach

It was believed that it would be impracticable to set up an ideal narrowly restricted utilization voltage spread as a model and attempt to induce the whole industry to conform to it. There are too many well established variations of practice to make possible the attainment of uniform voltage conditions immediately. It has seemed much better to approach the problem realistically by establishing maximum utilization voltage spreads representing existing conditions in so far as possible and by recommending *preferred utilization voltage spreads representing conditions which the industry should strive to attain.* In fact, present practices are meeting the situation to a limited extent. This is evident since equipment is being produced which operates more or less satisfactorily under the existing variety of conditions even though formal standards do not exist. The establishment of preferred utilization voltage spreads and limiting values should tend to (a) discourage further increases in the variety of voltage conditions, (b) reduce the number of cases, relatively few as they may be, which are responsible for the upper or lower extreme voltages, and (c) improve utilization equipment design and its operation by establishing a recognized spread of utilization and service voltages conforming with the better operating practices.

Recommendations

In the recommendations on page 243, the maximum utilization voltage spreads represent existing limits within which utilization equipment should be designed to operate with general satisfaction even though with occasional reductions in efficiency. Similarly the preferred utilization voltage spreads represent those voltage limits within which utilization equipment should be designed to operate most satisfactorily and efficiently. It is also recognized that utilization equipment may be called upon occasionally to give dependable operation at voltages above or below the limits of the usual maximum utilization voltage spread; i.e., the life of the equipment should not be reduced excessively by such occasional operation.

The optimum of utilization voltage standardization will have been achieved when all electric utility companies strive to maintain service voltages within the preferred maximum and preferred minimum voltage limits indicated above, and when the voltage drops in the customer's interior wiring are limited to three volts.

Low-Frequency Induction from Normal Load Currents of Distribution Feeders*

RECENT developments in signaling on telephone lines have extended the range of dialing to include the transmission of dial impulses over toll lines, including lines between toll offices and between community dial offices and master offices. Signaling circuits frequently are derived by compositing or simplexing the message circuits; thus, the signaling is on an earth return basis. Coincident with this development has been the rapid growth of multi-grounded neutral 60-cycle power feeders operating at about 12 kv, phase to phase (6.9 kv phase to neutral) for distribution in rural areas. These power feeders usually consist of a three-phase section and long single-phase branches composed of one phase-conductor and a multi-grounded neutral wire. Since telephone circuits and these power lines are frequently at no greater than roadway separation for considerable distances and a large percentage of the total load current of the single-phase power lines returns through the earth, appreciable induction in telephone circuits may result. This type of induction needs to be taken into account in the design of composited or simplexed signaling circuits in order that features may be incorporated which will limit their susceptiveness.

In order to determine the magnitudes of induction likely to be encountered in telephone circuits from this source, a survey was made in 33 exposure situations, distributed among several states.

In selecting exposures for this survey, situations were sought where the telephone line was paralleled at approximately roadway separation for a minimum of four or five miles by distribution lines carrying the neutral and one or two phase-conductors only, with the exposure located near the source of power and with extensive feeder mileage beyond the limits of, or branching off within the exposure. Thus the objective was to utilize situations that were somewhat more severe than the average run of exposures. However, a number of less severe exposures were included in the survey largely because of convenience in measuring on several exposures from the same location and the convenience of including some situations near New York. In a number of cases it was necessary to include a section of a three-phase feeder and in a few instances observations were made on exposures involving three-phase feeders alone.

The results of the study are discussed in Provisional Report No. 31. The principal data presented relate to the maximum voltage recorded from each exposure situation and to average daily distribution of the induction. Some data on average connected transformer capacity in kva per mile of power line and its ratio to the maximum load of the line are also included. Means for estimating earth currents and resulting induction due to normal loads are given in Appendices.

* Provisional Report No. 31 of the Joint D & R Subcommittees. Price 60 cents to members, $1.50 to non-members.

"The Second Mile"

"THE SECOND MILE" a pertinent, stimulating essay on the engineering profession by William E. Wickenden, President, Case School of Applied Science, has been printed in pamphlet form by the Engineers' Council for Professional Development.

In an enthusiastic foreword, O. J. Ferguson of the University of Nebraska, has this to say of the pamphlet: "Would you know better the essence of a profession? Would you know what engineering stands for in the present world? Would you envision the coming action programs of engineers who are now youths? Would you discern the philosophy of the engineer? Would you catch a glimpse of the breadth of conscious professional engineering responsibility? Even — would you read a well-conceived, delightfully phrased essay? Whichever view your inquiring mind takes, you will find some compulsion to thoughtfulness in Wickenden's paper.

The pamphlet is available from E.C.P.D. at 10 cents per copy, 5 cents in larger quantities, $3.00 per hundred. The address is 29 West 39th Street, New York.

Low Frequency Shielding in Telephone Cables

EEI Pub. J-4. Engineering Report No. 48. A report of the Joint Subcommittee on Development and Research, Edison Electric Institute and Bell Telephone System, 60 pages. Price 80c to EEI members and their employees; $2.00 to non-members in the U.S.A.; $2.15 to foreign countries.

THIS report replaces those parts of Engineering Report No. 26[1] which give methods of calculating shielding in telephone cables, and presents methods and material whereby a large variety of shielding problems involving short cables may be solved graphically. In addition, data are presented for types of cables which have come into use since Engineering Report No. 26 was published, among these being coaxial cables, cables with an internal layer shield for carrier transmission, and gopher - protected cables. Data are given for new manufacturing schedules of sheath thickness for lead cable, and the experimental information on shielding properties of tape-armored cable has been extended. The discussion is limited to cable circuits of such length (between repeaters) that the effects of charging currents associated with conductor capacitance can be neglected.

The main purpose of the report is to extend the data on shielding in telephone cables given in Engineering Report No. 26, Shielding of Ground Return Circuits at Low Frequency, to include types of cables which have come into use since that report was published. In addition, experience has indicated the desirability of modifying certain methods of computation given in that report, to make them better suited to the requirements of practical shielding calculations. In this report, therefore, the emphasis has been placed upon these practical requirements; for a discussion of the underlying theory, reference should be made to Engineering Report No. 26.

To facilitate calculations, a number of specific arrangements of shielding circuits of types likely to be encountered in practice are discussed and numerous graphs have been prepared with the aim of reducing the amount of computing work required. The types of cables covered include ordinary lead-sheath cable, tape-armored cable including the 10-mil gopher tape, coaxial cable with and without gopher-tape protection, and a cable with an internal layer shield for use in carrier transmission. The treatment includes both aerial and underground cable for both 60 and 25 cycles.

[1] *Engineering Reports*, Joint Subcommittee on Development and Research, vol. 4 (1937).

The discussion deals with voltages induced longitudinally in core conductors and sheaths by currents in neighboring power systems, under conditions regarding length of cable (between repeater points) such that effects of distributed capacitance between conductors and sheath may be neglected. If the cable sheath is grounded at more than one point, induced current will flow in it setting up counter longitudinal voltages in the cable conductors. Other paths for induced current may also be present, such as cable messengers, armor tapes, core conductors connected in parallel with the sheath, sheaths of adjacent cables, etc., and the induced current in these paths also will produce counter voltages. The production of these counter voltages is called magnetic shielding, and the induced currents in the various grounded circuits are called shielding currents. The longitudinal voltage impressed on the cable system by the current in the disturbing circuit is termed the "primary field." The net longitudinal voltage in a conductor is equal to the vector difference between the primary field and all of the counter longitudinal voltages.

American Standard Definitions of Electrical Terms Now Available

A NEW American Standard known as Definitions of Electrical Terms, C42, sponsored by the American Institute of Electrical Engineers, is now ready for general distribution. The issue of this volume of electrical definitions as an American Standard should mark an epoch in the literature of the electrical art in America, as it is the first time the definitions of the important terms common to all branches of the art as well as those specifically related to each of the various branches have been assembled and printed under one cover.

This glossary is the result of more than twelve years' work of a sectional committee of 46 members having 18 subcommittees drawn from available specialists. More than 300 individuals have given material assistance and many others have assisted in specific instances. The 34 organizations represented on this sectional committee include the national engineering, scientific and professional societies, trade associations, government departments and miscellaneous groups.

The primary aim in the formulation of the definitions has been to express for each term the meaning which is generally associated with it in electrical engineering in America. The definitions have been generalized wherever practicable to avoid precluding the various specific interpretations which may be attached to a term in particular applications. It has been recognized that brief, simplified phrasing usually presents the clearer word picture. Amplifying notes accompany certain definitions when the added information is particularly helpful, but those notes are not a legitimate part of the standard phrasing. Words used in the definitions have been employed in the accepted meaning as given in the recognized dictionaries, unless they have been defined specifically in this glossary. Specialized definitions for common words have been discouraged.

Prior to the inception of this work the definitions to be found in the literature of the electrical art were comparatively few, were very widely scattered and their formulation as to substance and expression was generally the work of individuals or small groups. Many of these had gained some measure of approval in that branch of the art responsible for their formulation, but were practically unknown elsewhere. Some groups of general terms had long been the subject of much controversy. The engineer or scientist or student who wished to have ready access to the definitions actually existing in printed form was faced with the necessity of assembling a sizable library. Moreover, in some cases he then had to choose between two or more definitions of the same term.

This new American Standard has unified and perfected the existing groups of definitions and has rounded out these groups and added many new groups. Its coverage is more than three times that of this field in any other language. It should prove of great value to the general public as well as to scientists and engineers for it is an extension of the function of the recognized dictionaries into specialized fields not hitherto covered.

The "Definitions" book is a handsome sturdy volume of some 300 pages, 8 x 11 inches; high quality paper and printing; dark blue fabricoid binding, gold lettering, thoroughly indexed. Price is $1.00 net each in U.S.A. to all on single copies or in quantity. $1.25 outside U.S.A. Make checks or money orders payable to AIEE. Address AIEE Headquarters, 33 West 39th St., New York, N. Y.

Our Job in Winning the War

(*Continued from page 216*)

the industry. Within the last few years the rules were changed for most of our companies with the adoption of a new uniform system of accounts as prescribed by the Federal Power Commission and by state regulatory bodies. In these rules depreciation accounting replaced the retirement accounting provisions which had been in effect for many years. Thus two problems are presented by the new requirements: the first—how to adjust the annual provision for depreciation to conform with the new rules; the second—how to adjust the depreciation reserves.

As you know, we have had a technical committee within our industry which has been working on this problem for some time. It has now come to the point where the heads of the various electric utilities must definitely agree on certain policies, for it is well to remember that there has been a considerable diversity of viewpoint within the industry itself.

Rising taxes, the readjustment of the provisions for depreciation which many companies face, the probable increase in operating costs . . . all will have their effects upon earnings. It takes a big increase in the sale of electricity to show any appreciable increase in net income. And this is particularly significant these days because the great volume of increased business is for industrial purposes, supplied at wholesale rates which ofttime are at or below the present day costs of production and delivery of power.

As an industry, our financial records are an open book. Our every move is open to the review and study of regulatory bodies, financial agencies and stockholders. But now, more than ever, we must keep our stockholders and our customers informed, not only by presentation of facts, but through intelligent, clear and readily understandable explanation of all the factors that affect the industry in its determination to give everything it has to the job of winning this war.

To solve these problems and meet these responsibilities in times like these calls for business statesmanship of the highest order. It calls for engineering ingenuity, it calls for sound financial leadership. It calls for diligent application, sacrifice, team work. Let's give it without stint.

Total war is terrible war. It is either victory or extinction. This is our struggle for our continued existence as a free people and as a free nation.

Victory in this war will depend upon four things: man power, material resources, production and morale.

Add up the man power of the United Nations and we have a great winning margin.

Tabulate the natural resources of the United Nations and we stand supreme.

Look at production and the accelerated American pace and the answer spells overwhelming victory.

But even more important, is morale. The morale of the United Nations is the greatest weapon of all.

It's the morale of free men against the morale of men doomed to slavery. It's the morale that gives fighting spirit and fighting hearts that men achieve only when having lived as free men. It's the morale of men fighting for their homes and the things they know are right.

Perhaps it took this war to make us realize that the heaven-sent gifts of democracy and freedom we have so long taken for granted are more precious than life itself.

So throw your heart and soul into this thing. As the men who operate the electric utilities of these United States, your part is the supply of power that will contribute so much to victory.

The more we do, the quicker victory will be and this is important in saving the lives of our fighting men.

Nothing is quite so tragic as the loss of life on the *last* day of war—the loss of men who would have lived had war been shortened by a *single* day.

So let us go from this meeting today and thank God we're Americans. It's our war. Let's win it and win it quickly. And when it's over it will be a still sweeter victory if our fellow Americans find a moment to say—"Well those electric fellows did one swell job."

Award Established for Plant Safety; Action on the Type S Fuse Situation by Operating Committee

AT THE meeting of the Operating Committee on June 10, held in connection with the annual business meeting of the Edison Electric Institute at the Hotel Biltmore, actions were taken on some matters that are of general interest to the electric utility industry. The Accident Prevention Committee had requested the Operating Committee to authorize an award to member companies or divisions thereof who are able to report the achievement of 1,000,000 manhours of work without a disabling injury. It was proposed that the award should consist of a certificate which would be granted upon application by the company achieving this high level of safety practice. The American Gas Association has granted similar certificates for some time past, with respect to the gas industry, and it appears that the results have been good in stimulating further effort toward accident prevention.

The Operating Committee approved the proposal of the Accident Prevention Committee, with the provision that the latter committee would formulate suitable rules to govern the issue of the award and that they would also devise a suitable form of certificate to be issued. The Accident Prevention Committee is now engaged upon the formulation of rules and form of certificate and as soon as this work is completed a further announcement will be made of the availability of the award.

The situation created by the establishment in the National Electrical Code of 1940 of a mandatory requirement for the use of so-called "Type S" fuses under certain conditions after November 1st, 1941, and the quite general failure to observe this provision has created confusion and uncertainty in the operations of serving consumers, especially domestic customers. Further it was reported to the committee that this mandatory requirement represented an excessive refinement of existing practice that was generally satisfactory, which, taking into consideration the difficulties in the procurement of materials and supplies under war conditions, was not warranted as a new and additional requirement to the Electrical Code for the duration of the war. In view of the circumstances the Operating Committee ordered that formal representations should be made to the officers and directors of the National Fire Protection Association which is the custodian and sponsor of the National Electrical Code.

PERSONALS

WALTER M. BIRD, formerly president of the Western Public Service Company, Scottsbluff, Neb., is now operating vice-president of the Savannah Electric and Power Co., Savannah, Ga. A native of Massachusetts and a graduate of the Lawrence Scientific School of Harvard University, Mr. Bird was identified with the Puget Sound Power and Light Company before becoming president of the Western Public Service Company in 1936.

Mr. Bird resigned as head of Western Public Service early this year, when the Nebraska and South Dakota properties were sold to the Consumers Public Power District of Nebraska.

J. C. CAVIN, who until recently was division sales manager for the Mississippi Power and Light Company in the Greenville area, has been transferred to Cleveland, where he now fills the position of manager of the company's northern division.

Mr. Cavin, who had more than fifteen years of experience, succeeds CLYDE V. HUSSEY, now with the Arkansas Power and Light Company in Pine Bluff.

SAMUEL FERGUSON, JR., manager of the New England division of the Connecticut Power Company, has been appointed assistant to the president. Mr. Ferguson will continue as assistant treasurer of the company. He was assistant to the manager of the Housatonic division from 1932 to 1937, following a connection with the Stone & Webster interests in Boston, Richmond and New York and was made manager in New London in 1937.

JOHN J. DOWLING, operating manager of the New London division since 1937, has been appointed manager. Mr. Dowling is a chemical engineering graduate of Rhode Island State College and was connected with Stone and Webster in New England and Louisiana until 1923 when he was appointed superintendent of power and gas engineer for the Connecticut Power Company, being promoted to his recent post in 1929.

HERMAN H. KOELBEL has been appointed manager of the Jackson division of Consumers Power Company to succeed FLOYD D. AVIS, resigned. Mr. Avis resigned to devote his full time to private business and agricultural interests.

Mr. Koelbel joined the Consumers' organization in 1915 at Muskegon, as a member of the sales department. Seven years later he was transferred to Jackson as assistant to F. W. HOOVER, who was in charge of security sales for Consumers and the several other companies now constituting the northern division of the Commonwealth and Southern Corp. Mr. Hoover was succeeded in this position by DAN E. KARN, and when Mr. Karn went to Kalamazoo in 1937 as division manager, Mr. Koelbel assumed charge of security sales.

Since 1933 he has been supervisor of dealer cooperative merchandising for Consumers, with the responsibility of promoting sales of electric and gas merchandise by appliance dealers, department stores and hardware dealers throughout the Consumers service area.

RONALD E. GREENE, assistant construction engineer of the Detroit Edison Company since 1938, has been appointed construction engineer, succeeding the late Arthur S. Douglass.

Mr. Greene became identified with the Detroit utility in 1926, when he entered the engineering division. Four years later he was appointed senior engineer. In 1937 Mr. Greene was transferred to the drafting and surveying bureau as assistant chief draftsman, and the following year he was appointed assistant construction engineer.

A native of Hudson, Mass., and a graduate of Worcester Polytechnic Institute in electrical engineering, Mr. Greene was identified with the General Electric Company before joining Detroit Edison.

G. BERTRAM REGAR, who has been assistant to the vice-president of the Philadelphia Electric Company in charge of sales since 1937, retired from active employment on June 1 due to prolonged illness, after more than 36 years of service.

His entire career was associated with the development and promotion of lighting. He became affiliated with the company as an illuminating engineer, and in 1916 was appointed manager of the lighting service division.

Mr. Regar joined the Illuminating Engineering Society at the time of its organization in 1906, served on many of its committees, both locally and nationally, and was national president in 1936-1937.

T. E. ROACH, assistant to the President of the Pacific Power and Light Company, will be transferred from Yakima, Wash., where he has been in charge of the company's Washington division, to the Portland office to assume broader responsibilities connected with wartime system operations. Assigned to the Washington division headquarters to succeed Mr. Roach is D. F. MCCURRACH.

Before going to Yakima to supervise and coordinate the operations of the Washington districts under the direction of Mr. Bragg, Mr. Roach was president of the Washington Gas and Electric Co., Tacoma.

Mr. McCurrach, who has been with the company for a number of years as an engineer and rate man in the Portland office, has been made assistant general manager in charge of the Washington division.

WILLIAM N. CUMMINS, JR., manager of the Hopewell office of the Virginia Electric and Power Company for the past three years, has been transferred to Norfolk, where he will be assistant to R. J. Throckmorton, vice-president of the company. Due to war conditions, Mr. Cummins will not be replaced in Hopewell at this time. DAVID T. EARLY will have charge of the local office and handle all company business. Mr. Early has been connected with the Hopewell office for a number of years.

CARLTON L. DUDLEY, formerly division superintendent, Camden area, Public Service Electric and Gas Co., Newark, N. J., has been appointed division superintendent, Essex Division, succeeding ARTHUR R. NELSON, who has been promoted to assistant general superintendent of distribution. GEORGE P. SIMMEN, formerly division superintendent, Trenton area, has been made division superintendent, Camden area, replacing Mr. Dudley and PERCY B. BASS, formerly assistant division superintendent, Hudson division, has been made division superintendent, Trenton area, succeeding Mr. Simmen. WILLIAM A. GUESS, who has served as installation engineer, general office, has been named assistant division superintendent, Hudson division, replacing Mr. Bass.

Electric Utilities and War Production

(*Continued from page 218*)

service industrial field—which field has given such stimulus and encouragement to science—engineering—private initiative and business management.

Again power and war production are syonymous.

I congratulate the men and women of the power industry on the effective contribution you are making to the war effort—you have a prominent place in the war line-up—with it great responsibility and a stiff challenge.

I happened to read the other night from an anonymous source an observation which struck me as rather simply stating the issue. It went about like this:

"Unlike the wars of history, this is no war of vested interest—no mere clash of armed might. It is the crucible, molten and filled with pain and agony, wherein our enemies now abroad seek to destroy the potential good which it is our destiny to protect."

And so, as we go our respective ways, whether it be God or Man who brought us this suffering, it is our destiny to bring the peace.

Transportation Problems

(*Continued from page 234*)

is permitted to operate more than one car. This would leave 25,000,000 in use during most of 1942. Then in the absence of a rigid program of conservation, and of course in the absence of the performance of some industrial miracle, there will be left in operation in America in December 1942, according to the above mentioned Report, 22,000,000 passenger vehicles; in June 1943, 15,000,000 vehicles; in December 1943, 10,000,000 vehicles, and in June 1944, just two years from this date, 4,000,000 vehicles will still be on the road—21,000,000 cars rendered useless in a two-year period due to lack of tires.

On the other hand, if we force the reduction of the annual mileage of 5,000,000 strictly non-essential vehicles to 2,000 miles per year, by gas rationing or other restrictive measures, and limit 20,000,000 essential cars to an average of 7,000 miles per year, the picture looks better. There will be 24,000,000 cars on the road in December 1942; 22,000,000 in June 1943; 17,000,000 in December 1943 and 12,000,000 in June 1944. The same ratio of reduction will naturally apply also to the six or seven million commercial vehicles now in use. It is our patriotic duty to voluntarily cut non-essential and some essential operations to the bone, and we cannot rightly criticize the Government for promulgating and enforcing by whatever means it may see fit regulations that will keep those 8,000,000 passenger cars and a correspondingly large proportion of commercial cars in the service of the country. Each of us and thousands of others have our individual problems to solve, but the big problem is that of the Nation—how to maintain a national economy in the critical years immediately ahead of us, when an essential product on which this economy is based can no longer be procured.

CONVENTIONS AND MEETINGS

1942

JUNE

8-10	American Society of Mechanical Engineers, Hotel Statler, Cleveland, Ohio.
10-12	Canadian Electrical Association, Log Chateau, Seigniory Club, Que.
11	Edison Electric Institute, Annual Meeting, Hotel Biltmore, New York, N. Y.
11-12	National District Heating Association, semi-annual meeting, The Dayton Biltmore Hotel, Dayton, Ohio.
15-17	American Society of Heating and Ventilating Engineers, semi-annual meeting, St. Paul Hotel, St. Paul, Minn.
21-24	Public Utilities Advertising Association, Hotel Commodore, New York, N. Y.
22-25	National Association of Cost Accountants, Chicago, Ill.
22-26	American Society for Testing Materials, Chalfonte-Haddon Hall, Atlantic City, N. J.

SEPTEMBER

24-25	Indiana Electric Association, Indianapolis, Ind.

Prize Awards

(*Continued from page 242*)

Houston Lighting and Power Company; Lloyd C. Fry of the Pennsylvania Power and Light Company; Lloyd C. Montague of the Oklahoma Gas and Electric Company; W. W. Whitt of the Alabama Power Company; C. C. Poyner of the Georgia Power Company; Edward C. Naughton of the Montana Power Company; Victor Leon Jewett of the Idaho Power Company; J. E. Spiller's Line Crew of the Oklahoma Gas and Electric Company; Frank D. Cannon's Line Crew of the Philadelphia Electric Company; Alden H. Smathers' Line Crew of the Philadelphia Electric Company; William O. Holliday, Jr.'s Line Crew of the New Orleans Public Service Inc.; Ralph H. Leister's Line Crew of the Philadelphia Electric Company; C. E. Jordan of the Appalachian Electric Power Company; Ballard F. Wade of the Virginia Public Service Company; Howard B. Litteral and William J. Marshall of the Appalachian Electric Power Company and Howard Hoyt's Line Crew of the Consumers Power Company.

Direct Mail Material for Farm Customers

ELECTRICITY is to play an important part in the battle of food production as well as of fighting equipment and Running Water is one of the biggest single factors contributing to the increased production of much needed dairy products, fruits and vegetables, meat and poultry.

These demands for higher production goals of farm products, together with restrictions imposed on transportation, present a twofold problem to utility rural departments. To an even greater degree, therefore, utilities must depend on the mails for carrying a helpful message to their farm customers.

The Electric Water Systems Council has prepared and is making available to utilities at low cost, two direct mail pieces, in color, stressing the importance of Running Water to increase food production. These two folders, a broadside and envelope stuffer, will bring to farm customers a message of the importance of an adequate supply of water and stress the need for keeping present equipment in good repair.

For prices and samples of this material address the Electric Water Systems Council, 420 Lexington Avenue, New York, N. Y.

OFFICERS AND COMMITTEES OF THE EDISON ELECTRIC INSTITUTE

1941-1942

OFFICERS

C. W. KELLOGG, *President*
420 Lexington Avenue, New York, N. Y.

PAUL M. DOWNING, *Vice-President*
Pacific Gas & Electric Co., San Francisco, Cal.

J. E. DAVIDSON, *Vice-President*
Nebraska Power Co., Omaha, Neb.

W. E. MITCHELL, *Vice-President*
Georgia Power Co., Atlanta, Ga.

H. S. BENNION, *Vice-President & Managing Director*
420 Lexington Avenue, New York, N. Y.

J. C. LEIGHTON, *Treasurer*
Engineers Public Service Co., New York, N. Y.

MAE B. WOODS, *Secretary*
420 Lexington Avenue, New York, N. Y.

OPERATING COMMITTEE

Chairman, C. W. KELLOGG, New York, N. Y.

E. R. ACKER, Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y.

J. M. BARRY, Alabama Power Co., Birmingham, Ala.

H. C. BLACKWELL, The Cincinnati Gas & Electric Co., Cincinnati, Ohio.

H. B. BRYANS, Philadelphia Electric Co., Philadelphia, Pa.

W. H. BURKE, Ebasco Services Incorporated, New York, N. Y.

C. L. CAMPBELL, The Connecticut Light & Power Co., Hartford, Conn.

J. E. DAVIDSON, Nebraska Power Co., Omaha, Neb.

PAUL M. DOWNING, Pacific Gas and Electric Co., San Francisco, Calif.

WILLIAM KELLY, Buffalo Niagara & Eastern Power Corp., Buffalo, N. Y.

J. C. LEIGHTON, Engineers Public Service Co., New York, N. Y.

FRANK MCLAUGHLIN, Puget Sound Power & Light Co., Seattle, Wash.

W. E. MITCHELL, Georgia Power Co., Atlanta, Ga.

W. H. SAMMIS, The Commonwealth & Southern Corp., New York, N. Y.

CHESTER C. SMITH, Kansas City Power & Light Co., Kansas City, Mo.

PHILIP SPORN, American Gas & Electric Service Corp., New York, N. Y.

E. C. STONE, Duquesne Light Co., Pittsburgh, Pa.

E. S. THOMPSON, American Water Works & Electric Co., New York, N. Y.

G. W. VAN DERZEE, Wisconsin Electric Power Co., Milwaukee, Wis.

P. S. YOUNG, Public Service Electric & Gas Co., Newark, N. J.

CHAIRMEN OF THE COMMITTEES

Accident Prevention, GEORGE S. DIEHL, Pennsylvania Water & Power Co., Baltimore, Md.

Accounting Executive, G. H. BOURNE, The Commonwealth & Southern Corp., New York, N. Y.

Customers' Relations, Commercial Accounting and Collections, H. R. FLANEGAN, Philadelphia Electric Co., Philadelphia, Pa.

Depreciation, H. L. GRUEHN, Consolidated Gas Electric Light & Power Co., Baltimore, Md.

General Accounting, J. W. GLENDENING, The Commonwealth & Southern Corp., New York, N. Y.

Plant Accounting and Records, H. B. HARDWICK, The Commonwealth & Southern Corp., New York, N. Y.

Purchasing Stores and Transportation, W. P. MCARDLE, Ebasco Services, Inc., New York, N. Y.

Electrical Equipment, R. W. WILBRAHAM, United Engineers & Constructors, Inc., Philadelphia, Pa.

Hydraulic Power, E. B. STROWGER, Buffalo Niagara & Eastern Power Corp., Buffalo, N. Y.

Insurance, J. H. NICKELL, Philadelphia Electric Co., Philadelphia, Pa.

Membership, EDWARD REYNOLDS, Columbia Gas & Electric Corp., New York, N. Y.

Prime Movers, J. A. KEETH, Kansas City Power & Light Co., Kansas City, Mo.

Prize Awards, H. P. LIVERSIDGE, Philadelphia Electric Co., Philadelphia, Pa.

Rate Research, F. A. NEWTON, The Commonwealth & Southern Corp., New York, N. Y.

General Commercial, R. E. FISHER, Pacific Gas & Electric Co., San Francisco, Cal.

Statistical, W. G. BOURNE, JR., The Commonwealth & Southern Corp., New York, N. Y.

Transmission and Distribution, E. V. SAYLES, The Commonwealth & Southern Corp., Jackson, Mich.

Codes and Standards (a Subcommittee of the Operating Committee)
H. B. BRYANS, Philadelphia Electric Co., Philadelphia, Pa.

BOARD OF TRUSTEES
OF THE
EDISON ELECTRIC INSTITUTE
1941-1942

(Terms expiring 1942)

JAMES B. BLACK.....Pacific Gas and Electric Company, San Francisco, Cal.
JAMES F. FOGARTY.....The North American Company, New York, N. Y.
C. W. KELLOGG.....Edison Electric Institute, New York, N. Y.
B. W. LYNCH.....San Diego Gas & Electric Co., San Diego, Cal.
A. C. MARSHALL.....The Detroit Edison Company, Detroit, Mich.
THOMAS N. MCCARTER.....Public Service Electric and Gas Company, Newark, N. J.
H. HOBART PORTER.....American Water Works & Electric Company, Inc., New York, N. Y.
HERBERT A. WAGNER.....Consolidated Gas Electric Light & Power Company of Baltimore, Baltimore, Md.
JUSTIN R. WHITING.....The Commonwealth & Southern Corporation, New York, N. Y.

(Terms expiring 1943)

PHILIP G. GOSSLER.....Columbia Gas & Electric Corporation, New York, N. Y.
H. P. LIVERSIDGE.....Philadelphia Electric Company, Philadelphia, Pa.
WILLIAM MCCLELLAN.....Union Electric Company of Missouri, St. Louis, Mo.
K. M. ROBINSON.....The Washington Water Power Company, Spokane, Wash.
P. L. SMITH.....Middle West Corporation, Chicago, Ill.
GEORGE N. TIDD.....American Gas & Electric Company, New York, N. Y.
JOHN E. ZIMMERMANN.....The United Gas Improvement Company, Philadelphia, Pa.

(Terms expiring 1944)

D. C. BARNES.....Engineers Public Service Company, New York, N. Y.
SAMUEL FERGUSON.....The Hartford Electric Light Company, Hartford, Conn.
C. E. GROESBECK.....Electric Bond and Share Company, New York, N. Y.
W. J. HAGENAH.....Public Utility Engineering & Service Corp., Chicago, Ill.
EDWARD REYNOLDS.....Columbia Gas & Electric Corporation, New York, N. Y.
A. H. SCHOELLKOPF.....Niagara Hudson Power Corporation, New York, N. Y.
E. W. WAKELEE.....Public Service Corporation of New Jersey, Newark, N. J.